

Before the
Federal Communications Commission
Washington, D.C. 20554

2001 JAN 23 P 4:07

In the Matter of)
)
The Development of Operational, Technical and)
Spectrum Requirements for Meeting Federal,)
State and Local Public Safety Communication)
Requirements Through the Year 2010)

WT Docket No. 96-86

RECEIVED

**FOURTH REPORT AND ORDER
AND
FIFTH NOTICE OF PROPOSED RULE MAKING**

Adopted: January 11, 2001

Released: January 17, 2001

Comment Date: 30 days after publication in the Federal Register

Reply Comment Date: 45 days after publication in the Federal Register

By the Commission:

TABLE OF CONTENTS

Heading	Paragraph
I. INTRODUCTION AND EXECUTIVE SUMMARY	1
II. BACKGROUND	3
III. FOURTH REPORT AND ORDER	6
A. Interoperability Channel Licensing Framework.....	6
1. Administrative and Technical Oversight	6
a. State Interoperability Executive Committees.....	12
b. Regional Planning Committee Responsibilities	14
c. Pre-coordination Database	17
d. Memoranda of Understanding and Sharing Agreements	21
2. Federal Use of the Interoperability Spectrum	25
3. End User Licensing.....	28
B. Trunking on the Interoperability Channels.....	34
1. Mandatory Trunking	34
2. Permissive Trunking	36
3. Guard Channels.....	46
C. Channel Designation and Access Priority	54
1. Channel Designation.....	54
2. Display Labeling (Nomenclature).....	57
3. Access Priority	60
4. Calling Channels.....	65
D. Technical Standards	69
1. Narrowband Digital Voice Standards for Interoperability Channels.....	69
2. Migration Path to 6.25 kHz Technology.....	73
a. 700 MHz Band Interoperability Channels.....	73

b. 700 MHz Band General Use Channels.....	79
3. Narrowband Low Speed Data Transmission Standard and Channel Reservation	83
4. Encryption.....	91
5. Receiver Standards and Interference	93
IV. FIFTH NOTICE OF PROPOSED RULE MAKING.....	95
V. PROCEDURAL MATTERS	100
A. Regulatory Flexibility Act.....	100
B. Ex Parte Rules -- Permit-But-Disclose Proceeding.....	101
C. Paperwork Reduction Act	102
D. Comments.....	103
VI. ORDERING CLAUSES	109

Appendices:

- Appendix A - List of Commenters
- Appendix B - Regulatory Flexibility Analyses
- Appendix C - Final Rules

I. INTRODUCTION AND EXECUTIVE SUMMARY

1. In this *Fourth Report and Order and Fifth Notice of Proposed Rule Making*, we adopt various technical and operational rules and policies regarding the use of frequencies in the 764-776 MHz and 794-806 MHz bands (the 700 MHz band) designated for interoperability uses.¹ The actions we take today are based on the recommendations that we received from the Public Safety National Coordination Committee (NCC),² an advisory committee established in accordance with the Federal Advisory Committee Act.³ In the *Fourth Notice* in this proceeding,⁴ we sought comment on the NCC's recommendations and certain other related issues.⁵

¹ The Commission has defined "interoperability" as "an essential communications link within public safety and public service wireless communications systems which permits units from two or more different entities to interact with one another and to exchange information according to a prescribed method in order to achieve predictable results." Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Agency Communications Requirements Through the Year 2010, WT Docket No. 96-86, *First Report and Order and Third Notice of Proposed Rulemaking*, 14 FCC Rcd 152, 189-90 ¶ 76 (1998) (referred to herein as "*First Report and Order*" or "*Third Notice*" as applicable).

² See Public Safety National Coordination Committee's Recommendations to the Federal Communication Commission for Technical and Operational Standards for Use of the 764-776 MHz and 794-806 MHz Public Safety Band Pending Development of Final Rules (Feb. 25, 2000) (NCC Report). The NCC Report included detailed technical information. A copy of the NCC Report can be obtained via the Internet at <http://www.fcc.gov/wtb/publicsafety/ncc.html>, or from International Transcription Services, Inc. (ITS), 1231 20th Street, N.W., Washington, DC 20036, (202) 857-3800, TTY (202) 293-8810, or faxing ITS at (202) 857-3805.

³ 5 U.S.C. App. 2 (1988).

⁴ Development of Operational, Technical, and Spectrum Requirements for meeting Federal, State and Local Public Safety Communication Requirements Through the Year 2010, WT Docket No. 96-86, *Fourth Notice of Proposed Rulemaking*, 15 FCC Rcd 16899 (2000) (*Fourth Notice*).

⁵ For example, we deferred resolution of a reconsideration request concerning "guard channels" for the 700 MHz band interoperability spectrum. See *Fourth Notice*, 15 FCC Rcd at 16900 ¶ 1 (referring to Com-Net Ericsson Critical Radio Systems Inc.'s (Com-Net Ericsson) petition for reconsideration of issues related to guard channels around the Interoperability channels).

2. We believe that our decisions today promote and facilitate the achievement of nationwide and regional interoperability in the 700 MHz band.⁶ We further believe that our actions will enable and accommodate the expeditious development and deployment of public safety equipment in the 700 MHz band without compromising our goal of effective and efficient utilization of the spectrum in this band. The major decisions and proposals in this *Fourth Report and Order and Fifth Notice* are as follows:

- We determine that the administrative and technical oversight of operations on the Interoperability spectrum should be performed at the state level. In the event that a state declines to do so, we determine that such functions should be performed by the 700 MHz band regional planning committee for that state.
- We make determinations regarding certain operational requirements for use of the 700 MHz band spectrum, such as channel designation and access priority.
- While we do not mandate trunking on the Interoperability channels, we permit trunked operations on eight of the Interoperability channels on a secondary basis under certain circumstances.
- We adopt Project 25 Phase I, a standard based on 12.5 kHz channels, as the voice standard for communications on the 700 MHz band Interoperability channels, and decide to revisit the issue of migration to a 6.25 kHz technology for these channels at a later date. In addition, we adopt the data standard incorporated in the Project 25 suite of standards for narrowband data communications on the 700 MHz band Interoperability channels.
- Equipment designed exclusively for voice communications is not required to be data-capable. Similarly, equipment designed exclusively for data applications is not required to be voice-capable.
- Licensees may employ encryption on any Interoperability channel, except the two calling channels, provided that they use the encryption standard specified by the Commission. Licensees that employ encryption must ensure that it may be disabled by the radio user using a readily accessible switch or other readily accessible control.
- We defer disposition on the issue of receiver standards for the 700 MHz band pending recommendations from the NCC on this matter.
- In the *Fifth Notice*, we seek specific comment on a migration path to 6.25 kHz technology for the 700 MHz band General Use channels.

II. BACKGROUND

3. In the *First Report and Order* in this proceeding, we adopted licensing and service rules for the 700 MHz band, which consists of twenty-four megahertz of radio spectrum comprised of TV Channels 63, 64, 68 and 69.⁷ Specifically, we adopted a band plan for the 700 MHz band whereby 12.6 MHz of spectrum was designated for General Use, 2.6 MHz for Interoperability and 8.8 MHz as Reserve Spectrum.⁸ In addition, we found strong support for national planning for both the Interoperability

⁶ See *First Report and Order*, 14 FCC Rcd at 189-90 ¶ 75.

⁷ See *First Report and Order and Third Notice of Proposed Rulemaking*, 14 FCC Rcd 152, 162-64 ¶¶ 13-16.

⁸ See *id.* at 176.

spectrum and the General Use spectrum in the 700 MHz band.⁹ Accordingly, we chartered the NCC as an advisory committee for the purpose of addressing and advising us on certain issues regarding the 700 MHz band.¹⁰

4. Among its major responsibilities, the NCC was charged with: (1) formulating and submitting for Commission review and approval an operational plan to achieve national interoperability that includes a shared or priority system among users of the Interoperability spectrum, for both day-to-day and emergency operations, and recommendations regarding Federal users' access to the Interoperability spectrum; (2) recommending interoperability digital modulation, trunking, and receiver standards for Commission review and approval; (3) providing voluntary assistance in the development of coordinated regional plans; and (4) providing general recommendations to the Commission on operational plans of the public safety community.¹¹ We stated that we intended to provide formality to the NCC and to ensure participation by representatives of all elements of the public safety community and that the Commission would not unnecessarily disturb technical standards recommended through this open and neutral process.¹² We explained that the NCC's recommendations regarding technical standards and operational requirements would be subject to Commission approval.

5. On February 25, 2000, the NCC submitted its report to the Commission, describing the participants in the NCC's decision-making process, the meetings that the NCC conducted, and the exchanges of information that occurred in developing the NCC's recommendations.¹³ On August 2, 2000, we released the *Fourth Notice* seeking comments on the NCC Report and its recommendations.

III. FOURTH REPORT AND ORDER

A. Interoperability Channel Licensing Framework

1. Administrative and Technical Oversight

6. *Background.* In the *Third Notice*, we sought comment on how best to administer the Interoperability spectrum.¹⁴ As a general matter, we envision that the entity administering the spectrum would be responsible for developing an interoperability plan and most likely hold the license for the Interoperability spectrum under its control.¹⁵ In this regard, we believe that some of the responsibilities involved in administering the Interoperability channels would include the creation and oversight of incident response protocols, creation of chains of command for incident response and reporting. We

⁹ See *First Report and Order*, 14 FCC Rcd at 196 ¶ 90.

¹⁰ See *id.*, 14 FCC Rcd at 197 ¶ 92. See also Federal Advisory Committee Act, 5 U.S.C. App. 2 (1988).

¹¹ See *First Report and Order*, 14 FCC Rcd at 197 ¶ 92.

¹² *Id.* See also *Memorandum Opinion and Order on Reconsideration*, 14 FCC Rcd 8059 (1999) (clarified that NCC may, but is not required to, become American National Standards Institute (ANSI)-accredited, and the NCC may make use of the work of existing ANSI-accredited Standards Developers), and *Second Memorandum Opinion and Order*, 15 FCC Rcd 16844 (2000) (*Second MO&O*) (clarified technical standards regarding automatic power control and frequency stability).

¹³ For a discussion of the NCC's activities from its inception, see NCC Report at 1-4.

¹⁴ *Third Notice*, 14 FCC Rcd at 233-234.

¹⁵ *Id.*

sought comment on whether the 700 MHz band regional planning committees (RPCs), the states, or some other entity should administer the Interoperability channels.

7. In its report, the NCC asserted that most states have statutes or regulations governing disaster response protocols.¹⁶ The NCC also noted that most wide-area mutual aid operations are managed and controlled by state-level organizations,¹⁷ and that, in states where there are multiple RPCs, or where one RPC covers multiple states, RPC administration of Interoperability spectrum may be difficult.¹⁸ For these reasons, the NCC recommended that the states and RPCs work together at the state level. Specifically, the NCC recommended that the states administer the Interoperability channels while oversight of the interoperability infrastructure would be the responsibility of the RPCs.¹⁹ Under this framework, the states would plan the use and operation of the Interoperability channels, with the RPCs performing technical reviews of the applications. If a state were unwilling to administer the channels, however, then the NCC recommended that the RPCs would assume the states' administration responsibility as well.²⁰

8. In the *Fourth Notice*, we agreed with the NCC that administration of the Interoperability channels should occur at the state level.²¹ Thus, we proposed to have the states administer the Interoperability channels. Under our proposal, applications for Interoperability spectrum would be approved by a state-level agency or organization responsible for administering state emergency communications. Under this approach, a state may be the licensee for all stations operating on the Interoperability channels or it may approve other eligible public safety entities to be licensees. We also noted that the state could delegate the approval process for Interoperability channels to another entity, such as a RPC.²²

9. *Discussion.* Based upon the record in this proceeding, we conclude that administration of the Interoperability channels should occur at the state level. As noted by the NCC and several commenters, state-level organizations are usually in control at large-scale events and disasters or multi-agency incidents.²³ Given the central role states currently play in managing emergency communications, we believe that the states are best suited for administering the Interoperability channels. Further, we believe that state-level control will promote safety of life and property through seamless, coordinated communications on the Interoperability channels.²⁴ In this connection, we note that states are usually in the best position to coordinate with Federal Government emergency agencies.

¹⁶ NCC Report at Appendix E at 1.

¹⁷ *Id.*

¹⁸ *Id.*

¹⁹ *Id.* at Appendix E at 1, 4.

²⁰ *Id.* at Appendix E at 1.

²¹ *Fourth Notice*, 15 FCC Rcd at 16909 ¶ 21.

²² *Id.*

²³ See NCC Report at Appendix E at 1, New York State Technology Enterprise Corporation (NYSTEC) Comments at 10. State-level entities may include the Governor of the state or commonwealth or his or her designee (including a state agency).

²⁴ See 47 U.S.C. § 151 (one of the reasons Congress created the Commission was to promote safety of life and property through the use of wire and radio communication).

10. The majority of the commenters who addressed the issue of administrative oversight agree that administration of the Interoperability channels should be performed at the state-level.²⁵ Thus, the state, or state-level agency, would hold licenses, resolve licensing issues and develop the statewide interoperability plan. However, we recognize that certain states may be unable or unwilling to perform these administrative functions.²⁶ In this regard, we note that the City of Mesa, Arizona (Mesa) contends that the RPCs should administer the Interoperability channels.²⁷ Mesa maintains that the RPC should administer these channels because it is the most representative group for the largest number of users.²⁸ However, we are not persuaded by this reasoning. While we recognize that the RPCs may have certain technical expertise, we nonetheless believe the ability of most states to organize and respond to multi-jurisdictional incidents and the interests the states have in protecting the lives and property of their citizens outweighs the concerns expressed by Mesa. Thus, we conclude that the states, in the first instance, should be responsible for administration of the Interoperability channels.

11. Because some states may not establish a state-level agency for a variety of reasons, we establish the following safeguards to ensure that a responsible entity maintains responsibility for the administration of the Interoperability channels. First, each state must decide whether it will administer the Interoperability spectrum or defer to the RPC. Regardless which entity the state chooses to administer the Interoperability spectrum, it must notify the Commission by December 31, 2001 what entity will administer its channels. If a state fails to notify the Commission by December 31, 2001, then effective January 1, 2002, the RPC will administer the channels. We believe that the 700 MHz band RPC is the next best entity to administer the Interoperability spectrum based on the familiarity and expertise it will obtain in the context of planned operations for the General Use spectrum. If a state declines to administer the Interoperability channels in a situation where more than one RPC provides coverage to the state, then the state must decide which RPC will administer the Interoperability channels. As stated previously, a state's declination may be formal or as a result of inaction. In either scenario, however, the end result remains the same in that on January 1, 2002, the RPC would begin administering the Interoperability channels.

a. State Interoperability Executive Committees

12. *Background.* In the *Fourth Notice*, we discussed the NCC's recommendation that each state should form a State Interoperability Executive Committee (SIEC) to administer the Interoperability channels.²⁹ Under this approach, the NCC recommends that entities desiring a license to operate on the Interoperability channels would enter into a Memorandum of Understanding (MOU) with the relevant SIEC.³⁰ The SIEC would be charged with enforcement of the MOU's terms,³¹ with final authority vested

²⁵ Joint Commenters (American Association of State Highway and Transportation Officials (AASHTO), Forestry Conservation Communications Association, International Association of Fire Chiefs, Inc., International Association of Fish and Wildlife Agencies, International Municipal Signal Association, and the National Association of State Foresters) Comments at 8; National Public Safety Telecommunications Council (NPSTC) Comments at 4; NYSTEC Comments at 9-10; Orange County, California (Orange County) Comments at 2; David Buchanan (Buchanan) Comments at 3; State of California (California) Comments at 8; State of Florida (Florida) Comments at 3; State of Ohio (Ohio) Comments at 2.

²⁶ Orange County Comments at 2; NPSTC Comments at 4; NYSTEC Comments at 9-10; Buchanan Comments at 3.

²⁷ See Mesa Comments at 3.

²⁸ *Id.*

²⁹ *Fourth Notice*, 15 FCC Rcd at 16909 ¶ 23.

³⁰ See *infra* para. 21-24 for a discussion of MOUs and sharing agreements.

with the Commission. The NCC recommended that, among other duties, SIECs develop interoperability operational plans. If a SIEC or another state agency elected not to oversee development of such plans for a state, then the NCC recommended that the RPC perform this function.

13. *Discussion.* Based on the record, we agree with the NCC and the majority of the commenters and support the creation of SIECs.³² The states best know their own capabilities and the best management of their resources. Some states already have a mechanism in place that could administer the Interoperability channels. In such cases, requiring a SIEC would be duplicative and overly burdensome for the states. Although we support the idea of creating a SIEC or another equally effective state level agency to administer the Interoperability channels, we decline to require the formation of SIECs. However, we adopt the NCC's recommendation that if a SIEC or other state agency elects not to oversee the administration of its Interoperability channels, the RPCs will assume this responsibility. We believe a voluntary framework that allows each state to determine its requirements is the best approach. As previously noted, however, the state does not have an unlimited amount of time to determine whether they will establish the SIEC, or equivalent state agency. Therefore, if the state has not set forth a plan for establishing its SIEC, or its equivalent, by December 31, 2001, effective January 1, 2002, then the RPCs will have the responsibility for administering the Interoperability channels.³³

b. Regional Planning Committee Responsibilities

14. *Background.* In its report, the NCC recommended that (1) the oversight of the technical parameters of the interoperability infrastructure should reside with the RPCs; (2) the RPCs should urge the states to jointly develop interoperability operational plans—and failing that—to develop such plans independently; and (3) the RPCs should request the states to hold the licenses for infrastructure—and failing that—to have the licenses held by the next highest level of government.³⁴ In the *Fourth Notice*, we requested comment on whether the RPCs should review the technical parameters of applications for Interoperability channels.³⁵ The RPCs already have a mechanism in place to review the technical parameters of applications in the 700 MHz band spectrum.³⁶ We also sought comment on whether we should require the RPCs to verify that the application is in accordance with the state-approved plan for Interoperability spectrum, or if there is no plan, to certify that the application has been approved by the appropriate state-level agency.³⁷ Under this approach, RPCs would be free to advocate that the states develop interoperability plans or, with state approval, develop a plan on their own. In addition, as discussed above, states could hold the licenses for Interoperability spectrum or approve other entities to hold licenses.³⁸

(Continued from previous page)

³¹ *Fourth Notice*, 15 FCC Rcd at 16910 ¶ 23.

³² American Public-Safety Communications Officials-International, Inc. (APCO) Comments at 14; Illinois State Police Comments at 3; Joint Commenters Comments at 8-9; NPSTC Comments at 4; Public Safety Wireless Network (PSWN) Comments at 5-6; California Comments at 8; Florida Comments at 3.

³³ See *supra* paras. 10-11.

³⁴ NCC Report at 12 ¶ 36.

³⁵ *Fourth Notice*, 15 FCC Rcd at 16911 ¶ 30.

³⁶ *Id.*

³⁷ *Id.*

³⁸ The licenses referred to here are for base and control stations.

15. *Discussion.* Several commenters concur with the NCC that the RPCs should exercise some form of review over the technical parameters of applications for Interoperability channels.³⁹ We believe that there are benefits associated with the RPCs being responsible for reviewing the technical parameters of applications for Interoperability channels and verifying that the applications are in accordance with the state-approved interoperability plan. The RPCs have a review mechanism in place for the 700 MHz General Use spectrum. At times, this expertise puts them in a superior position to efficiently review the technical parameters for the Interoperability channels. Technical review is necessary to assure continuity between separate systems, as well as the proper support of the administration of the Interoperability channels in the region.⁴⁰ We believe, then, that RPC review can help ensure compliance with the interoperability plan developed for the states.⁴¹

16. If the state agrees to administer the Interoperability channels, it will have primary responsibility and authority over these channels, with technical review of applications being handled in the context of the frequency coordination process. For example, if a state decides it will be the sole licensee on the Interoperability channels, the state will file the necessary FCC applications for each base station, following the normal application process, including frequency coordination. If a state's interoperability plan authorizes a base station in a particular county with the license to be held by that county, the county will file the necessary FCC application. Finally, if the state plan contemplates using the Interoperability channels only for mobile to mobile communications, no applications would be filed with the Commission, because mobile units will be blanket licensed. In each of these cases, we encourage (but do not require) the state to include the pertinent RPC, with the state defining the RPC's role. We believe that setting detailed rules on the RPC's role would be inconsistent with our decision to give the states administrative responsibility. If the state declines to administer the Interoperability channels, the relevant RPC(s) will have primary responsibility and authority over these channels. Under this scenario, the RPC will develop the interoperability plan, review applications for base stations, and provide pre-coordination technical review.

c. Pre-coordination Database

17. *Background.* In the *Fourth Notice*, we sought comment on the NCC's recommendation that we require RPCs to use a "pre-coordination database" that would be developed for the 700 MHz band.⁴² Under the NCC's proposal, the pre-coordination database, which would be provided and maintained by the National Law Enforcement and Corrections Technology Center and funded by the National Institute of Justice, would be a source of real-time data regarding interoperability assignments, including pre-application requests. The NCC believes that our mandating use of the pre-coordination database would ensure the avoidance of co-channel and adjacent channel interference.⁴³

³⁹ City of College Station, Texas (College Station) Comments at 1; Mesa Comments at 4; Illinois State Police Comments at 4; Joint Commenters Comments at 9-10; Orange County Comments at 2; PSWN Comments at 4-5; Buchanan Comments at 3; Florida Comments at 4.

⁴⁰ College Station Comments at 1.

⁴¹ Illinois State Police Comments at 4.

⁴² *Fourth Notice*, 15 FCC Rcd at 16922-23 ¶¶ 61-63. We note that the NCC's recommendation pertains to the public safety 700 MHz band as a whole. However, we address the issue only with regards to the interoperability channels.

⁴³ NCC Report at 23-24 ¶ 74, Appendix K (Letter from Marilyn Ward, Chair, National Public Safety Telecommunications Council, to Kathleen Wallman, Chairperson, NCC, dated Apr. 22, 1999).

18. *Discussion.* While the majority of those commenting on this issue support the use of a pre-coordination database,⁴⁴ they disagree on whether such use should be required by our Rules. While we agree with the commenters that a pre-coordination database has great merit, we decline to mandate use of the pre-coordination database at this time. We believe that use of a pre-coordination database could be deemed desirable not only for the planning purposes of individual states but also for the purpose of facilitating smooth and effective coordination with neighboring jurisdictions. As a result, we concur with the Joint Commenters' contention that such a database could be used as an effective planning tool in administering the Interoperability spectrum.⁴⁵ We are not persuaded, however, that it would be the most prudent course of action to require the use of a database that has not yet been developed, completed, and tested. We are concerned that our decision could inadvertently delay the actual utilization of the Interoperability spectrum.

19. Moreover, we believe the pre-coordination database may have the greatest benefit in planning for the General Use channels, given that we expect to have more applications filed for the General Use channels, and to have more licensees in the General Use channels. Indeed, it is not clear to what extent public safety entities will build infrastructure for use on the Interoperability channels requiring the filing of applications, as opposed to using the Interoperability spectrum for mobile-to-mobile communications.

20. We fully support the efforts underway to complete development of a pre-coordination database for the 700 MHz band. We believe it is appropriate to direct the NCC to revisit the issue of mandating use of the pre-coordination database once the database is developed and has begun operation. Moreover, we encourage those entities administering the Interoperability spectrum to consider using the database in their planning and oversight of the spectrum. In addition, our decision not to mandate use of the pre-coordination database should not be viewed as a statement on the feasibility or usefulness of such database. We note that nothing precludes the states from voluntarily using the pre-coordination database once it is operational. In addition, we ask the NCC to continue to monitor the efforts under way to develop the database and report to the Chief, Wireless Telecommunications Bureau, once the database is complete.

d. Memoranda of Understanding and Sharing Agreements

21. *Background.* In the NCC Report, the NCC Interoperability Subcommittee proposed that states use templates for: (i) memoranda of understanding between the SIECs and interoperability channel applicants; and (ii) sharing agreements whereby a licensee authorizes non-licensees, federal government agencies and non-governmental organizations (NGOs) to operate mobiles on the licensee's system.⁴⁶ The sharing agreement template was designed for the non-licensees, NGOs and federal agencies.⁴⁷

22. Based on that recommendation, the NCC developed a model Memoranda of Understanding (MOU) that would govern the use of the Interoperability channels, and proposed that we require an

⁴⁴ APCO Comments at 16; College Station Comments at 2; Orange County Comments at 18; Federal Law Enforcement Wireless Users Group (FLEWUG) Comments at 10; Illinois State Police Comments at 7; International Association of Chief of Police (IACP) Reply Comments at 2; Joint Commenters Comments at 16; NCC Comments at 19-20; NPSTC Comments at 8; PSWN Comments at 11; California Comments at 18; Florida Comments at 6; Ohio Comments at 3.

⁴⁵ Joint Commenters Comments at 16. *But see Ex Parte Letter* filed in the captioned proceeding on December 4, 2000, by Forestry Conservation Communications Assn. ("FCCA," one of the Joint Commenters) clarifying FCCA's view that a pre-coordination database should be in the Commission's Rules.

⁴⁶ NCC Report at 13 ¶ 37.

⁴⁷ *Id.*

applicant and the relevant SIEC, or other entity that is charged with administering the Interoperability channels, to sign an MOU before a license could be granted. The model MOU requires, *inter alia*, licensees to use plain language on the Interoperability channels; to monitor the calling channels and coordinate use of the tactical channels; to limit secondary trunking on the Interoperability channels; and to follow a set of priority levels when using the channels.⁴⁸ The NCC noted that the SIECs and RPCs might adapt the model MOU to their own needs.⁴⁹ The NCC also has developed a model sharing agreement for use of the Interoperability channels.⁵⁰ The NCC contemplated that when foreign users (*i.e.*, non-licensees, federal government agencies, or NGO) respond to a particular incident, sharing of the Interoperability channels would be done on the basis of an *ad hoc* "virtual sharing agreement" that would begin at the time of the response and end at the conclusion of the incident.⁵¹ Use of the virtual sharing agreements would be restricted to licensees eligible for Interoperability channels and non-licensees, NGOs and federal agencies that have executed written sharing agreements in their home jurisdictions.⁵²

23. We have determined that the states (or their designees) will administer the Interoperability spectrum.⁵³ In order to receive a license to operate a base or control station on Interoperability channels, the applicant must secure approval from the state. The exact procedures that a state may use to administer its channels were not clearly explained by the NCC. We therefore sought comment on the NCC's proposals on the issues of MOUs and sharing agreements and how these proposals would work in practice.⁵⁴

24. *Discussion.* The commenters were divided concerning how to implement the MOUs and sharing agreements. With such inconsistency among the commenters, at this time, we do not believe that a formal rule requiring states to use MOUs is appropriate. We are not convinced that our Rules should dictate the specific details of this approval process. Requiring a formal rule at this juncture could only serve to increase the administrative burden placed on the states, many of whom may be poised to implement the MOUs and sharing agreements or similar documents voluntarily. Thus, we strongly encourage states to follow the NCC's proposal and have the relevant SIEC, or other entity that is responsible for the administration of the Interoperability channels, sign an MOU before a license can be granted.

2. Federal Use of the Interoperability Spectrum

25. *Background.* In the *Fourth Notice*, we noted the NCC's recommendation that our Rules should be sufficiently flexible to allow state and local authorities to enter into contractual agreements with Federal authorities.⁵⁵ In this connection, the NCC correctly observed that Section 2.103(b) of our Rules⁵⁶

⁴⁸ *Id.* at Appendix E at 5-6. See *infra*, ¶¶ 65-68 (discussion of calling channels), ¶¶ 36-45 (discussion of secondary trunking), and ¶¶ 60-64 (discussion of access priority).

⁴⁹ NCC Report at 13 ¶ 41.

⁵⁰ *Id.* at 13 ¶ 37, Appendix E at 7.

⁵¹ *Id.* at 13 ¶ 37.

⁵² *Id.*

⁵³ See *supra*, ¶ 9.

⁵⁴ *Fourth Notice*, 15 FCC Rcd at 16912 ¶ 32.

⁵⁵ NCC Report at 22 ¶ 72, Appendix J.

⁵⁶ 47 C.F.R. § 2.103(b).

already offers flexibility in this regard. Specifically, Section 2.103(b) permits Government entities to use channels in the public safety 700 MHz band with non-government entities if the Commission finds such use necessary where:

- (a) The stations are used for interoperability or part of a Government/non-Government shared or joint-use system;
- (b) The Government entity obtains the approval of the non-Government (State/local government) licensee(s) or applicant(s) involved;
- (c) Government operation is in accordance with the Commission's Rules governing operation of this band and conforms with any conditions agreed upon by the Commission and the [NTIA]; and
- (d) Interoperability, shared or joint-use systems are the subject of a mutual agreement between the Government and non-Government entities. This section does not preclude other arrangements or agreements as permitted under Part 90 of the Rules. *See* 47 C.F.R. §§ 90.179, 90.421.⁵⁷

26. In the *Fourth Notice*, we referenced our earlier conclusion that there is no impediment to Federal use of the 700 MHz band through the use of sharing agreements.⁵⁸ As a result, we tentatively concluded that an additional rule was not necessary to facilitate Federal sharing of the Interoperability spectrum and sought comment on our tentative conclusion.⁵⁹

27. *Discussion.* Most commenters agreed with our tentative conclusion that no further changes to our Rules are necessary in order to facilitate or accommodate Federal use of the 700 MHz band Interoperability spectrum. Because Section 2.103(b) of our Rules already provides this flexibility, we will not amend our Rules further. In this regard, we reiterate that Federal stations may be authorized in the 700 MHz band provided certain conditions are met.⁶⁰ One of these conditions is that the operation of such stations, whether for the purposes of interoperability, shared or joint-use systems, be the subject of a mutual agreement between the Federal entity and the non-Federal licensee.⁶¹ We nonetheless note that our Part 90 rules permit other arrangements or agreements whereby a Federal entity can be a user on a system that is owned and operated by a non-Federal licensee.

3. End User Licensing

28. *Background.* The NCC recommended in the *Fourth Notice* that we license subscriber equipment (mobiles and portables),⁶² asserting that such licensing would forestall abuse of the

⁵⁷ 47 C.F.R. § 2.103(b) (1999). Use of the terms "government" and "non-government" are pursuant to the language in the *First Report and Order*, which notes, "In the United States, radio spectrum may be allocated exclusively or for shared use to either government (Federal government) or non-government (state/local governments and civilians)." *First Report and Order*, 14 FCC Rcd at 185 ¶ 67.

⁵⁸ *Fourth Notice*, 15 FCC Rcd at 16922 ¶ 60, citing *Second MO&O*, 15 FCC Rcd at 16865-68 ¶¶ 46-53.

⁵⁹ *Fourth Notice*, 15 FCC Rcd at 16922 ¶ 60.

⁶⁰ *See* 47 C.F.R. § 2.103(b).

⁶¹ *See* 47 C.F.R. § 2.103(b)(4). In the *Second MO&O*, we noted that the interoperability and reserve spectrum were subject to further Commission action in the captioned proceeding; accordingly, our conclusion on the validity of Federal use of the 700 MHz band through sharing agreements was operative only as to the general use spectrum. *See Second MO&O*, 15 FCC Rcd at 16867-68 ¶ 50. We clarify that our conclusion in the *Second MO&O* is now operative as to all 700 MHz band spectrum.

⁶² NCC Report at 12 ¶ 35, Appendix E at 2.

Interoperability channels in the 700 MHz public safety band.⁶³ In support of its recommendation, the NCC stated that we should take measures to guard against abuses that allegedly have occurred in the five mutual aid channels in the 821-824 MHz and 866-869 MHz bands (800 MHz band).⁶⁴ Because the NCC believed that abuses had occurred, we sought comment concerning the nature and type of abuses.⁶⁵

29. Currently, an entity must have a license to operate a base or control station on the five 800 MHz band mutual aid channels.⁶⁶ Mobile operation, however, is permitted on these channels without an individual license by any entity operating in accordance with an approved 800 MHz regional plan (*i.e.*, a blanket licensing approach).⁶⁷ Thus, we presumed that the NCC was recommending that we require entities that want to operate mobile units, including portables, on the 700 MHz Interoperability channels to obtain an individual license. In the *Fourth Notice*, we stated that we favor blanket licensing, as opposed to individual licensing. Therefore, we proposed to allow public safety entities to operate mobile units on the 700 MHz band Interoperability channels without an individual license if (1) such entities are eligible to hold a 700 MHz band license, or (2) such entities otherwise are licensed under Part 90 of our Rules.⁶⁸ We sought comment on these proposals, the NCC's recommendation for licensing end users, as well as the issue of whether the NCC's suggestions would require amendments to Sections 90.179 and 90.421 of our Rules.⁶⁹ A number of commenters support our proposal for blanket licensing.⁷⁰

30. *Discussion.* We do not believe that the current record supports the NCC recommendation. As explained in the *Fourth Notice*, the primary objective in setting aside Interoperability spectrum and requiring all 700 MHz equipment to be capable of operating on these channels was to ensure that all public safety entities could communicate with one another, especially during disaster situations.⁷¹ Blanket licensing all public safety licensees so that they are authorized for mobile operation, rather than requiring an individual license, better supports this objective. Furthermore, blanket, rather than individual, licensing eliminates many administrative burdens associated with licensing (*i.e.*, entities would not have to apply for a mobile license, and the Commission would not have to process the applications).⁷²

⁶³ *Id.*

⁶⁴ *Id.* See generally 47 C.F.R. §§ 90.16, 90.617(a); Development and Implementation of a Public Safety National Plan and Amendment of Part 90 to Establish Service Rules and Technical Standards for Use of the 821-824/866-869 MHz Bands by the Public Safety Services, GEN Docket No. 87-112, *Report and Order*, 3 FCC Rcd 905, 908-09 (1987) (800 MHz Band *Report and Order*) (discussing "mutual aid channels"), as modified by *Memorandum Opinion and Order on Reconsideration*, 3 FCC Rcd 5391 (1988), *Memorandum Opinion and Order*, 3 FCC Rcd 2113 (1988).

⁶⁵ *Fourth Notice*, 15 FCC Rcd at 16911 ¶ 27.

⁶⁶ See 800 MHz Band *Report and Order*, 3 FCC Rcd at 909 ¶¶ 30, 33-34; see generally 47 C.F.R. §§ 90.16, 90.20, 90.603, 90.617, 90.619(a)(2).

⁶⁷ See 800 MHz Band *Report and Order*, 3 FCC Rcd at 909 ¶¶ 30, 33-34.

⁶⁸ *Fourth Notice*, 15 FCC Rcd at 16911 ¶ 28.

⁶⁹ *Id.*; 47 C.F.R. §§ 90.179 (Shared use of radio stations); 90.421 (Operation of mobile units in vehicles not under the control of the licensee).

⁷⁰ Joint Commenters Comments at 9; Mesa Comments at 4.

⁷¹ *Fourth Notice*, 15 FCC Rcd at 16910 ¶ 26.

⁷² *Id.*, 15 FCC Rcd at 16911 ¶ 26.

31. Several commenters, however, support licensing end users.⁷³ The Illinois State Police, for example, fear that if subscribers are not licensed, control of the channels will be diminished.⁷⁴ In addition, the FLEWUG has concerns that unless equipment is licensed directly by the Commission, potential problems could arise with equipment compatibility and security.⁷⁵ However, FLEWUG maintains that blanket licensing will not provide a benefit if licensees develop and adhere to appropriate equipment licensing procedures and interoperability plans.⁷⁶ In addition, FLEWUG takes issue with Florida's statement that subscriber licensing will not improve the effectiveness of interoperability and that it will likely hinder, rather than promote, acceptance of the interoperability system by local agencies.⁷⁷ The PSWN shares this view and disagrees with both the NPSTC and of Florida.⁷⁸

32. The record does not support the conclusion that abuses exist to an extent that would justify the administrative burdens of individual licensing. The NCC did not identify in its Report any specific abuses it believes have occurred in the 800 MHz public safety band. Accordingly, we sought comment on the types of abuses that have occurred allegedly as a result of not requiring licensing of end users.⁷⁹ Few commenters provided responses regarding the types of abuse that have resulted from not requiring licensing of end users. Florida explained that during the implementation of the NPSPAC channels, there was sporadic abuse. No mention of the type or nature of abuse was provided. It is our understanding, however, that such abuse was resolved through improved understanding and cooperative use. Florida also stated that it could not cite any ongoing occurrences of abuse that are significant enough to warrant licensing of end users.⁸⁰ In addition, the NCC stated that abuses are difficult to document because they are generally received and addressed verbally.⁸¹ Thus, the record contains little evidence of abuses. Moreover, parties have commented that end user licensing would not eliminate all abuses that have occurred.⁸²

33. In response to our request for comment on whether adoption of the NCC's suggestion requires amendment to Sections 90.179 and 90.421 of our Rules, FLEWUG stated that maintaining individual licensing of base and mobile equipment could obviate the need to amend Sections 90.179 and 90.421.⁸³ We believe that the limitation of blanket licensing to entities eligible under the two-part standard referenced above will help prevent abuses without being overly burdensome. Thus, we will

⁷³ Illinois State Police Comments at 3; FLEWUG Comments at 5; APCO Comments at 14 (APCO suggests requiring licensing of end users where a user is not otherwise a 700 MHz band licensee. In the alternative, however, APCO suggests requiring all users to enter into a MOU with the SIEC or RPC.).

⁷⁴ Illinois State Police Comments at 3.

⁷⁵ FLEWUG Comments at 5; FLEWUG Reply Comments at 3.

⁷⁶ FLEWUG Comments at 5.

⁷⁷ FLEWUG Reply Comments at 3.

⁷⁸ PSWN Reply Comments at 3-4.

⁷⁹ *Fourth Notice*, 15 FCC Rcd at 16911 ¶ 27.

⁸⁰ Florida Comments at 3.

⁸¹ NCC Comments at 9.

⁸² *See* Joint Commenters Comments at 9; California Comments at 9-10.

⁸³ FLEWUG Comments at 5.

make necessary amendments to Sections 90.179 and 90.421 of our Rules in order to implement this standard.

B. Trunking on the Interoperability Channels

1. Mandatory Trunking

34. *Background.* In the *Fourth Notice*, we tentatively concurred with NCC's recommendation that we not mandate trunking on the thirty-two Interoperability channel sets because trunking can occur only when communications take place through a system infrastructure.⁸⁴ The NCC asserted that most interoperability communications would occur at the scene of an incident on a mobile unit-to-unit basis, not through an infrastructure.⁸⁵ Accordingly, only a few infrastructure interoperability channels are required in most cases.⁸⁶ The NCC therefore contended that the cost of configuring a small number of infrastructure channels for trunked operations would not be justified by the slight increase in spectrum efficiency that would result with trunking.

35. *Discussion.* Our review of the record shows that if we mandate trunking, then *all* mobile units nationwide must have trunking capability. We believe the small benefit gained in spectrum efficiency does not outweigh the disadvantages associated with mandatory trunking, specifically, the expense of added cost, weight, and complexity to the units. We believe the availability, lower cost, and simplicity of direct unit-to-unit and conventional repeated communications⁸⁷ will result in true interoperability between two or more different entities on a larger scale than by mandating trunking. We note, too, that trunking requires a communications system infrastructure, which generally will not be found in rural areas.⁸⁸ Similarly, only large metropolitan areas would employ a sufficient number of Interoperability channels to justify trunking from a cost standpoint.⁸⁹ The alternative to a nationwide database would be to have "foreign" units responding to a major incident register at the scene of an incident, thereby possibly introducing unacceptable delays. We note that the ability of foreign units to respond to emergencies could be compromised if those units were required to register with the trunked system before they could be used. We concur with the NCC that registration during an emergency could cause unacceptable delays.⁹⁰ Thus, we will not mandate trunking on the Interoperability channels.

2. Permissive Trunking

36. *Background.* The NCC recommended that we allow trunking on a limited number of Interoperability channel sets.⁹¹ The NCC maintained that jurisdictions would likely implement trunked

⁸⁴ Sixty-four 6.25 kHz channels are designated for interoperability; used as 12.5 kHz channels there are 32 channels.

⁸⁵ NCC Report at 7 ¶ 17.

⁸⁶ *Id.* at 7 ¶ 18.

⁸⁷ See Florida Comments at 1.

⁸⁸ See Joint Commenters Comments at 7.

⁸⁹ See NCC Report at 7 ¶ 18.

⁹⁰ Emergencies tend to be local in nature and are often difficult to predict. Thus, in many instances, an extensive trunking capability—built at considerable public cost—would lie dormant. See *Fourth Notice*, 15 FCC Rcd at 16904 ¶ 8, n.26.

⁹¹ NCC Report at 10 ¶ 27.

interoperability systems if they could use the Interoperability channels as part of their General Use systems when the channels were not needed for interoperability purposes.⁹² At the same time, the NCC noted that with such trunking, some jurisdictions' systems might fail to release, or "de-trunk," the trunked channels immediately when the channels were required for unit-to-unit conventional interoperability communications.⁹³ Thus, the NCC recommended adoption of a number of safeguards. First, to help ensure that Interoperability channels were always available when necessary, the NCC recommended that we permit trunking only on a secondary basis and then only on ten of the thirty-two Interoperability channels designated for interoperability use. Trunking would be prohibited on the remaining Interoperability channels. Second, the NCC recommended that we permit secondary trunking only if a jurisdiction maintains a continuous (twenty-four hours per day, seven days per week) dispatch facility at which the facility operator releases the Interoperability channels for conventional (*i.e.*, non-trunked) use on demand, with no discretion on the operator's part.⁹⁴

37. The NCC further recognized that secondarily trunked channels might become so integral to the jurisdiction's trunked system that it could become "politically impossible" to release them for interoperability communication. To prevent a jurisdiction from holding the channels hostage, the NCC recommended a third safeguard that would permit systems to use secondary trunking only as follows: (1) systems with ten or fewer general use channels could use one Interoperability channel for secondary trunking, and (2) systems with more than ten general use channel sets could use two Interoperability channels for secondary trunking.⁹⁵ Systems with twenty or more general use channel sets could request to use more than two channel sets for secondary trunking. These requests for more than two channels would be decided on a case-by-case basis by the entity that administers the Interoperability spectrum.⁹⁶

38. In the *Fourth Notice*, the Commission asked for comments on the NCC's trunking recommendations. In doing so, the Commission tentatively concluded that some limited trunking capability had merit. The Commission also stated, however, that it was not convinced that it should establish rules other than the secondary restriction to safeguard conventional use. Further, it asked for comment on whether ten channels was the appropriate number of channels to designate for secondary trunking.⁹⁷ In addressing the issue of trunking Interoperability spectrum, the Commission noted that the spectrum immediately adjacent to the Interoperability channels is part of the reserve spectrum. Rather than combine two 12.5 kHz Interoperability channel pairs, the Commission raised the option of combining 12.5 kHz Interoperability channel pairs with 12.5 kHz reserve channel pairs to form 25 kHz channels. The Commission requested comments on this option.⁹⁸ Further, to insure that this operation was available, the Commission designated spectrum adjacent to the narrowband Interoperability channels as temporary guard band channels.⁹⁹

⁹² *Id.* at 7 ¶ 20.

⁹³ *Id.* at 8 ¶ 21.

⁹⁴ *Id.*

⁹⁵ *Id.*

⁹⁶ *Id.*

⁹⁷ *Fourth Notice*, 15 FCC Rcd at 16906 ¶ 13.

⁹⁸ *Id.* at 16908 ¶ 17.

⁹⁹ Development of Operational, Technical, and Spectrum Requirements for meeting Federal, State and Local Public Safety Communication Requirements Through the Year 2010, WT Docket No. 96-86, *Third Memorandum* (continued....)

39. The Joint Commenters disagreed with the NCC proposal regarding permitting ten of the Interoperability channels to be trunked on a secondary basis, out of concern about the ability to revert to conventional use in an emergency situation.¹⁰⁰ The Joint Commenters stated that, should the Commission adopt NCC's proposal to allow such trunking, then continuous "24/7" monitoring is absolutely essential.¹⁰¹

40. *Discussion.* As noted above, we have decided not to mandate trunking. We agree with the NCC and others, however, that allowing trunking on a permissive basis has merit. Governmental entities largely supported the idea of permissive trunking on a limited number of Interoperability channels. For example, Florida, Ohio, and California noted the role that local sharing arrangements and the regional planning committees have in ensuring the integrity of the Interoperability channels for their intended purpose.¹⁰² Further, California stated that it "supports the idea of permitting some of the Interoperability channels to be integrated into the trunked systems that may be constructed by specific agencies,"¹⁰³ but expressed concern about the proposal that "... operation must immediately be discontinued whenever any channel sets are needed for interoperability communications,"¹⁰⁴ suggesting there are many instances in which a particular emergency can be handled without requiring the release of a channel that is being used in the trunked system.¹⁰⁵

41. Orange County and Mesa concurred with the NCC recommendation.¹⁰⁶ Mesa noted that "[I]f jurisdictions are going to the expense of building emergency capacity into their trunked systems, they must be getting something for it. Allowing them secondary use for their normal, day-to-day operations gives them something . . . [Mesa is] not going to spend \$160,000 per channel for equipment we cannot routinely use just so it's there in case of emergency."¹⁰⁷ Buchanan stated that permissive trunking "will aid large multi-agency systems like the County of San Bernardino system, where most day-to-day interoperability and some large scale emergencies are conducted on the trunked system among the

(Continued from previous page) _____

Opinion and Order and Third Report and Order, 15 FCC Rcd 19844 (2000) (referred to hereinafter as "*Third MO&O*" or "*Third R&O*" as applicable), Appendix G.

¹⁰⁰ Joint Commenters Comments at 8.

¹⁰¹ *Id.*

¹⁰² See Ohio Comments at 2, "The why's, when's and how's of de-trunking should be clearly defined in [a] Memorandum of Understanding and Sharing Agreement." Florida Comments at 2, "[w]hile disputes could arise in some cases, we believe the Commission's proposal to limit permissive trunking to only ten channel sets, and on a strict secondary basis, will be sufficient to prevent any significant long-term problems." But see Baltimore County, Maryland, Comments at 1, "It is out contention that until such time that there is an authority appointed over the users of the system, there is not a guaranteed methodology that will eliminate the channels necessary in a timely manner."

¹⁰³ California Comments at 6-7.

¹⁰⁴ *Id.* at 7, citing *Fourth Notice*, 15 FCC Rcd at 16906 ¶13.

¹⁰⁵ California Comments at 7.

¹⁰⁶ See Mesa Comments at 1-2; Orange County Comments at 1-2.

¹⁰⁷ Mesa Comments at 1-2.

different agencies involved.”¹⁰⁸ Nokia and Kenwood also supported the NCC recommendation, stressing the need for quick clearance of the Interoperability channel when it is needed for conventional use.¹⁰⁹

42. Based on the record in this proceeding, we believe that jurisdictions are more likely to implement interoperability capability in their trunked infrastructure if they could use some of the Interoperability channels pairs as part of their general use trunked systems during the majority of the time when the channels are not needed for interoperability purposes. Further, we agree with the NCC that to obtain the benefits here we need only to allow trunking on a few of the Interoperability channels. The majority of Interoperability channels should remain available for the most likely interoperability communications scenario, conventional communications on a unit-to-unit basis. Therefore, we will allow trunking on a limited number of Interoperability channels. To ensure that these Interoperability channels are always available when necessary for conventional interoperability operations, we will allow trunking only on a secondary basis as recommended by the NCC. Further, as recommended by the NCC, we will put a limit on the number of Interoperability channels that can be used in a trunked system.

43. With respect to the NCC’s recommendation that a jurisdiction must maintain continuous monitoring so that the channels can be released immediately when needed for interoperability communications, we believe it is appropriate to require such monitoring when the channels are being used in trunked operation. The majority of the commenters support such monitoring.¹¹⁰ We believe that the entities charged with administering the Interoperability channels are in an appropriate position to determine the specific means by which they will comply with this monitoring requirement. Accordingly, we adopt a rule regarding the monitoring and clearance of the Interoperability channels.

44. The final questions that must be answered here are how many channels we intend to allow for permissive trunking use, and which ones. As noted above, we recently revised the 700 MHz band plan in the *Third Memorandum Opinion and Order*.¹¹¹ Based on the changes made in this item, we will permit trunking on eight 12.5 kHz Interoperability channels on a secondary basis to conventional operations, instead of allowing trunking on ten Interoperability channels as recommended by the NCC.¹¹² The NCC recommendation of ten was based on the previous band plan. Each of the eight channels that we are allowing 25 kHz trunked operation on will consist of a 12.5 kHz Interoperability channel (two contiguous 6.25 kHz channels) and one of the adjacent guard band channels (two contiguous 6.25 kHz channels).

45. Entities will be able to use one Interoperability 12.5 kHz channel pair in the trunked mode for every ten 12.5 kHz general use channels trunked. The maximum number of Interoperability channels that can be used by any individual licensee is four. Taking this option minimizes the impact that trunked operations have on the spectrum set aside for interoperability, and ensures that one licensee does not prevent other licensees from using these channels. The guard band channels will be called secondary

¹⁰⁸ Buchanan Comments at 2.

¹⁰⁹ Nokia Comments at 18, “To ensure that secondary trunking does not interfere with interoperability, a simple and foolproof method of ensuring that these channels are released when required for emergency purposes must be utilized.” Nokia then asserts that its TETRA-compliant system is just such a method. Kenwood Corporation Comments at 3-4, “. . . a simple and reliable method of assuring release of the channels for [interoperability] use on a timely basis is necessary.”

¹¹⁰ APCO Comments at 11-13; E.F. Johnson Comments at 1; Joint Commenters Comments at 8; Kenwood Comments at 4; NPSTC Comments at 3-4; NYSTEC Comments at 7-8; Nokia Comments at 18; PSWN Comments at 3-4

¹¹¹ See *Third MO&O*, 15 FCC Rcd at 19851-19860 ¶¶ 16-39.

¹¹² The eight channels represent 25% of the Interoperability channels.

trunking channels and can only be used in connection with the adjacent Interoperability 12.5 kHz channel pair in a trunked system. Because the secondary trunking channels (guard band channels) are combined with Interoperability spectrum, they will be administered by the State. The specific 6.25 kHz channels that can be combined to form the eight 25 kHz trunked channels are as follows: 21, 22, 23 and 24; 61, 62, 63 and 64; 101, 102, 103 and 104; 141, 142, 143 and 144; 181, 182, 183 and 184; 221, 222, 223, and 224; 261, 262, 263 and 264; and 301, 302, 303, and 304.¹¹³ The remaining guard band channels that were held in reserve pending our decision on this matter are allotted to the reserve pool.

3. Guard Channels

46. *Background.* As noted in the *Fourth Notice*, the NCC asserted that we should preserve the possibility of converting specified two-channel groups in the Interoperability band to four-channel groups to accommodate technologies that require more than a 12.5 kHz bandwidth.¹¹⁴ The NCC recommended that if we did not adopt Com-Net Ericsson Critical Radio Systems, Inc.'s (Com-Net Ericsson) proposal,¹¹⁵ that we should preserve as "guard channels" the two contiguous 6.25 kHz reserve channels immediately below the ten 12.5 kHz Interoperability channel sets on which the NCC recommends we permit secondary trunking.¹¹⁶ This designation would allow users to combine the guard channels with certain Interoperability channels to form 25 kHz channel blocks. The NCC proposed that the guard channels should not be available except for use in conjunction with secondary trunking on the Interoperability channels. It also stated that guard channels could be combined to form 25 kHz channel blocks if we decide at some later date to increase the bandwidth of the Interoperability channels to 25 kHz.¹¹⁷ The NCC further notes that if the Com-Net Ericsson proposal were approved, then guard channels would no longer be necessary.¹¹⁸

47. In the *Fourth Notice*, we proposed to prohibit trunking on all but ten Interoperability channels because the remaining channels are reserved for conventional operations. Thus, we did not anticipate that entities would employ technologies requiring 25 kHz bandwidths—such as TETRA—on these channels. We also expressed concern about, and solicited comment on, the potential adjacent channel interference that may result from repositioning the Interoperability channels into groups of four contiguous channel sets, as proposed by Com-Net Ericsson.¹¹⁹ Specifically, we requested comments on the allocation of the temporary guard channels. We also sought comments on the potential for adjacent channel interference if the Interoperability channels were reallocated in groups of four, as previously suggested by Com-Net Ericsson. Finally, we sought comments on the need to provide 25 kHz aggregated blocks on all the Interoperability channels, or only on the channels where secondary trunking is permitted.

¹¹³ Although not specifically listed, the mobile side of the pair is included. See Appendix C, 47 C.F.R. §§ 90.531(b)(1)(iii), 90.531(b)(7).

¹¹⁴ NCC Report at 11 ¶ 32.

¹¹⁵ Com-Net Ericsson initially had sought a plan that would allow for aggregation of four 6.25 kHz, to make 25 kHz. Interestingly, in its Comments to the *Fourth Notice*, Com-Net Ericsson abandons this position, and asks that we not consider any interoperability spectrum with a potential channel bandwidth greater than 12.5 kHz. Com-Net Ericsson Comments at 11-12.

¹¹⁶ NCC Report at Appendix C at 2-3.

¹¹⁷ *Id.* at Appendix C at 2.

¹¹⁸ *Id.* at 11 ¶ 32.

¹¹⁹ See *Fourth Notice*, 15 FCC Rcd at 16920-21 ¶¶ 57-58 (discussing receiver standards and interference issues).

48. We note that in June 2000, the NCC offered a revised band plan, wherein four contiguous 6.25 kHz channels make up each Interoperability channel set.¹²⁰ The center channels of each set comprise the 12.5 kHz Interoperability channel, with 6.25 kHz channels on either side serving as guard channels. The four channels could be aggregated to form a single 25 kHz channel.¹²¹

49. *Discussion.* While we intend to allow permissive trunking on eight Interoperability channels, with its concomitant need for four 6.25 kHz channels, we decline to adopt a band plan that has guard channels. Instead, as we noted when discussing permissive trunking, we recently revised our 700 MHz band plan.¹²² This plan, while not incorporating guard channels *per se*, does provide one of the benefits of having guard channels, *i.e.*, the ability to aggregate four 6.25 kHz channels (two 6.25 kHz Interoperability channels, plus two 6.25 kHz reserve channels) so that secondary trunking may occur.

50. Interestingly, while most commenters generally agreed with NCC's recommendation, their reasons spoke not so much of "guarding" against adjacent channel interference, as adopting a band plan allowing for aggregation of four 6.25 kHz channels to 25 kHz. For example, the Joint Commenters concurred that the band plan should provide for aggregation of four 6.25 kHz channels for 25 kHz operation,¹²³ while APCO supported NCC's recommendation, as well as the NCC's June 2000 band plan. APCO believes that "[a]doption of that plan will facilitate flexibility to create contiguous spectrum blocks, without posing new adjacent channel interference problems."¹²⁴ Mesa supported the assignment of four contiguous channels for some Interoperability use. It suggested that the two middle channels in the four contiguous blocks should be used for the 12.5 kHz Interoperability channel, to ensure freedom from interference. Mesa also suggested that all four channels in this contiguous group should be labeled "Interoperability/guard band" so their use is assured in interoperability situations regardless of future technology.¹²⁵

51. California, Florida, NYSTEC, and Kenwood all agreed, with minor variations, with the NCC proposal to develop a scheme allowing the aggregation of four 6.25 kHz channels to form a 25 kHz contiguous block of spectrum for interoperability operations.¹²⁶ Florida supported a 6.25 kHz guard channel be positioned on each side of the 12.5 kHz Interoperability channel, instead of implementing two contiguous 6.25 kHz (*i.e.*, 12.5 kHz) channels above or below the 12.5 kHz Interoperability channel pairs. While the total bandwidth is the same (25 kHz), Florida argues that there should be less adjacent channel interference with guard bands on each side.¹²⁷ The FLEWUG asked the Commission to adopt the June 2000 version of NCC's band plan.¹²⁸

¹²⁰ NCC Comments, Attachment 1.

¹²¹ NCC Comments at 8.

¹²² See *Third Memorandum MO&O*, 15 FCC Rcd at 19851-19860 ¶¶ 16-39.

¹²³ Joint Commenters Comments at 8.

¹²⁴ APCO Comments at 13.

¹²⁵ Mesa Comments at 2-3.

¹²⁶ See Kenwood Comments at 4-5; NYSTEC Comments at 9; California Comments at 7-8; Florida Comments at 2.

¹²⁷ Florida Comments at 2.

¹²⁸ FLEWUG Comments at 3.

52. Others were even more circumspect in their view toward guard channels. E.F. Johnson favored leaving the Interoperability channels as 32 channel sets of 12.5 kHz, but agreed that the 6.25 kHz guard channels on either side of the Interoperability channels should be available for aggregation. E.F. Johnson believes that such aggregation should be allowed only on the ten defined trunking channels.¹²⁹ Nokia, while not commenting explicitly on what band plan to adopt, “wishes to emphasize that the alignment of the Interoperability channels must be maintained in a technologically neutral manner so as not to preclude use of any valid technology in the future.”¹³⁰ Meanwhile, Com-Net Ericsson, following up on its assertion that permissive trunking should not be allowed, argued that “[n]ot allowing permissible (*sic*) trunking removes the need to provide four (4) contiguous channels in the Interoperability spectrum. In fact, Com-Net Ericsson no longer sees any need to reorganize the Interoperability spectrum such that four 6.25 kHz Interoperability channels are contiguous.” Com-Net Ericsson further argued that the Interoperability spectrum not entertain any channel bandwidth greater than 12.5 kHz.¹³¹

53. We do not discern among the commenters an overriding urgency to adopt a band plan that has guard channels; there was little discussion of adjacent channel interference. Rather, the commenters stated that the band plan we adopt should be configured so that four 6.25 kHz channels could be aggregated into 25 kHz. As noted previously, the band plan in the *Third MO&O* provides for such aggregation, and we here reiterate our adoption of that plan.

C. Channel Designation and Access Priority

1. Channel Designation

54. *Background.* The NCC recommended that we adopt a table of channel assignments for the Interoperability channels.¹³² The table would assign a particular purpose and name to each Interoperability channel set (two 6.25 kHz channels). In the *Fourth Notice*, we indicated that certain benefits as well as disadvantages were inherent in a table of channel assignments.¹³³

55. *Discussion.* Upon review of the record, we believe the disadvantages associated with limiting flexibility of channel use outweigh the advantages. Thus, we will not adopt a table of channel assignments. We agree, with the majority of commenters who, while generally supportive of channel designation, expressed concern about codifying the recommendation. Florida, for example, while noting that such designation “has considerable value to the effective and cooperative use” of mutual aid channels, expressed concern about “the degree of specificity and exclusiveness incorporated in the NCC-recommend (*sic*) naming and use designation”¹³⁴ For their part, the Joint Commenters asserted that adoption of a table of assignments would be Federal micro-management of a local issue, resulting in the deprivation of the states’ flexibility to address local situations.¹³⁵

¹²⁹ E.F. Johnson Comments at 1-2.

¹³⁰ Nokia Comments at 19.

¹³¹ Com-Net Ericsson Comments at 11-12.

¹³² NCC Report at 14 ¶ 42.

¹³³ *Fourth Notice*, 15 FCC Rcd at 16912-13 ¶ 33.

¹³⁴ Florida Comments at 4.

¹³⁵ Joint Commenters Comments at 10.

56. We are concerned, too, about the administrative problems inherent in adoption of such a table. For example, each time the public safety community wished to revise a channel label, we would have to initiate a rulemaking proceeding or rule upon a waiver request before the table could be amended. We believe this procedure would be cumbersome, and can be avoided by simply deferring to the states to devise a suitable channel designation scheme. In addition, such a "hard and fast" table would limit system flexibility. For example, a channel designated for Fire Services could not be used for Police Services. Such inflexibility would seem to defeat a main purpose of Interoperability, *i.e.*, interagency cooperation. Accordingly, we will not adopt a table of channel assignments into our Rules.

2. Display Labeling (Nomenclature)

57. *Background.* Generally, transmitters used under Part 90 of our Rules must be certificated for use.¹³⁶ In its report, the NCC recommended that we require mobile units certificated for use under Part 90 of the Rules be capable of displaying Interoperability channel labels alphanumerically if the radios are equipped with alphanumeric displays.¹³⁷ The NCC also recommended that when a mobile radio is operating in the direct (simplex) mode,¹³⁸ the letter "D" should be appended to the end of the displayed channel label.¹³⁹ The NCC asserted that adoption of these rules would allow the establishment of a nationally standardized format to communicate on Interoperability channels, as well as to eliminate guesswork during a multi-agency response.¹⁴⁰

58. *Discussion.* In general, the commenters believed the recommendation was appropriate, but differed as to whether we ought to codify it. At a minimum, however, all commenters agreed that establishment of a minimum national standard that was available to public safety entities and equipment manufacturers was necessary. For example, the Joint Commenters and Florida offered tepid support of the recommendation.¹⁴¹ Florida was "hesitant to encourage this degree of detail [*i.e.*, requiring alphanumeric channel labeling] as a requirement of the Commission's Rules, particularly considering that the provision of alphanumeric display is not itself a requirement for equipment certification."¹⁴² Kenwood rejected the recommendation, asserting that it represented too much Federal regulation over essentially local matters, and that what NCC recommended would not fit, physically, on some of the equipment favored by local public safety entities.¹⁴³

59. We believe the practical and administrative burdens of such a requirement outweigh the benefits. It strikes us as excessive Federal involvement in the equipment certification process. Thus, we will not adopt a rule codifying the NCC's recommendation. Instead, we agree with those commenters, like Kenwood, who urge development of an industry standardized display labeling scheme for the

¹³⁶ 47 C.F.R. § 90.203. *See* 47 C.F.R. Part 2, Subpart J.

¹³⁷ NCC Report at 14 ¶ 43, Appendix D at 4.

¹³⁸ In this case, simplex operation is mobile to mobile communications on one-half of the channel pair. The communications do not go through an infrastructure. Simplex operation is often the dominant mode of communications between multiple public safety agencies at the scene of an accident. *Id.*

¹³⁹ *Id.*

¹⁴⁰ *Id.* at Appendix D at 1-2.

¹⁴¹ Joint Commenters Comments at 10; Florida Comments at 4.

¹⁴² Florida Comments at 4-5.

¹⁴³ Kenwood Comments at 7.

Interoperability channels, including numbering and display schemes for conventional and trunked mode operation. An industry standard would provide the flexibility that is necessary to accommodate changes. Additionally, manufacturers will have an incentive to provide radio equipment with user programmable display options, capacity and modes satisfying the industry standards of the public safety user community.”¹⁴⁴ Given that its membership is drawn from a wide range of interests in the public safety community, we believe the NCC would be an appropriate body to develop such an industry standardized scheme. Accordingly, we direct the NCC to consider the development of an industry standardized scheme for display labeling.

3. Access Priority

60. *Background.* The NCC recommended that we adopt a priority scheme for the use of the Interoperability channels.¹⁴⁵ The NCC recommends that users receive priority access only for “mission critical” communications, not for administrative or other non-mission critical communications.¹⁴⁶ Under the NCC’s scheme, a party wishing to use an Interoperability channel in use by another party would declare its level of priority. The higher level of priority would gain use of the channel; the party with the lower priority level would be required to cease its communications immediately. Under the NCC’s proposal, the highest level of priority, Level 1, would be for disaster and extreme emergency operations for mutual aid and interagency communications. The next level, Level 2, would be for emergency or urgent operations involving imminent danger to life or property. Level 3 would be for special event control, generally of a preplanned nature (including task force operations). Finally, Level 4, the lowest level (and the default when no higher priority level has been declared) would be for single agency secondary communications.¹⁴⁷ Conventional use of the Interoperability channels always would have precedence over secondary trunked use.¹⁴⁸ Within the same level of priority, the NCC recommends giving access to the organization with the wider span of control or authority. The NCC states that the proposed priority levels are taken from the Public Safety Wireless Advisory Committee (PSWAC) report and represent the consensus opinion of experts in the field.¹⁴⁹

61. *Discussion.* In the *Fourth Notice*, we expressed our view that, while we found merit in a priority scheme, we were not convinced that such a scheme should be codified in our Rules. We believed the states were in a better position to determine priority use and resolve disputes. We also noted that the priority levels the NCC recommends differed from the Priority Access Service (PAS) levels we adopted to allow commercial mobile radio service (CMRS) providers to provide PAS for national and security and emergency preparedness (NSEP) personnel.¹⁵⁰

62. The majority of commenters agreed with our tentative conclusion in the *Fourth Notice*, and sought to preserve the ability of localities to devise appropriate priority levels, and not have priority levels

¹⁴⁴ *Id.* at 8.

¹⁴⁵ NCC Report at 14 ¶ 44.

¹⁴⁶ *Id.* at Appendix D.

¹⁴⁷ NCC Report at 14 ¶ 44.

¹⁴⁸ See *Fourth Notice*, 15 FCC Rcd at 16906 ¶ 13.

¹⁴⁹ NCC Report at 15 ¶ 47.

¹⁵⁰ See Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Agency Communication Requirements Through the Year 2010, WT Docket No. 96-86, *Second Report and Order*, 15 FCC Rcd 16720, 16721 (2000).

imposed on them.¹⁵¹ These commenters opposed the access priority scheme as a rule for a variety of reasons, including excessive Federal involvement in an essentially local matter; concepts of federalism, and over-regulation.¹⁵² Yet, some commenters sought codification of the NCC's recommendations. NYSTEC, for example, opined that some form of priority access scheme must be introduced, and that mere recommendation (as opposed to codification) would have the unintentional consequence of allowing different regions to implement different, perhaps confusing or conflicting, priority schemes, which would be detrimental in region border areas.¹⁵³ For similar reasons, Baltimore County, Maryland urged that rules governing priority access "should be clearly defined To have an operation moved [from an Interoperability channel] based on priorities that another jurisdiction defines as 'higher' will lead to either confusion on the first or second incident or the lack of support by all jurisdictions within a region to adopt the standards."¹⁵⁴

63. As first noted in the *Fourth Notice*,¹⁵⁵ we continue to believe that states, not the Commission, are in the superior position to devise, coordinate and operate an appropriate access formula. Priority levels are determined as part of a state's plan, and states should coordinate frequency use and priority levels to develop a seamless Interoperability system at mutual border areas. Thus, the states should address these border issues when devising their Interoperability plans with the goal of a seamless Interoperability system.

64. In addition to our desire to provide the states with flexibility to adopt a priority access system, we still observe that the priority levels the NCC recommends are different from the PAS levels that we recently adopted in rules allowing CMRS providers to provide PAS for NSEP personnel. We are not persuaded that codifying new Federal access levels would be appropriate at this time. We believe that another set of priority levels would serve only to create confusion during a large-scale or multi-agency response. Therefore, after consideration of the record, we decline to codify an access priority scheme for the Interoperability channels. We nonetheless encourage states, as they adopt priority access schemes, to consider Federal access levels associated with communications during disaster or emergency situations.

4. Calling Channels

65. *Background.* The NCC recommended, and we agreed, that we should designate two Interoperability channels as calling channels to use as gateways to other channels.¹⁵⁶ Public safety entities, particularly those from "outside the system," would use calling channels to access the public

¹⁵¹ See Ohio Comments at 2, "As long as these recommendations are not codified and left to the local RPC for interpretation, [Ohio] supports the recommendation;" Florida Comments at 5, "We believe that each state should consider the priority schemes proposed by the NCC, but should be free to implement and manage its own priority schemes to the extent necessary in their particular case;" California Comments at 12, "The State supports the priority levels proposed by the NCC and opposes the use of Priority Access Service (PAS) levels." Kenwood Comments at 8-9, "[an access priority scheme] is . . . an administration issue, best left to the administrators of the [interoperability] channels;" See also PSWN Comments at 6-7; NPSTC Comments at 6; Illinois State Police Comments at 5; FLEWUG Comments at 5-6; Orange County Comments at 3-4; College Station Comments at 2; Mesa Comments, at 5.

¹⁵² See commenters cited at n.151, *supra*.

¹⁵³ NYSTEC Comments at 11-12.

¹⁵⁴ Baltimore County, Maryland (Baltimore County) Comments at 1-2.

¹⁵⁵ *Fourth Notice*, 15 FCC Rcd at 16907 ¶ 37.

¹⁵⁶ NCC Report at 15 ¶ 45.

safety communications infrastructure in the area where they are located. For example, a fire department responding to an incident in another county could use the calling channels to find out the appropriate on-scene tactical channel or how to contact other public safety entities such as the police. In addition, the NCC recommended that we require licensees using the associated Interoperability channels to monitor the calling channels. In addition to normal calling channel use, the NCC recommends using the channels to declare emergencies and to request the immediate release of any channels being used for secondary trunking.¹⁵⁷ Finally, the NCC recommends that we forbid the use of encryption on calling channels.

66. We agreed that calling channels were a key part of any Interoperability system. Accordingly, we proposed to specify two of the 700 MHz Interoperability channels as nationwide calling channels.¹⁵⁸ We indicated that these channels would be reserved for activities such as coordination of multiple public safety entities at the scene of an incident or entities that were outside the system, but were requesting help or information.¹⁵⁹

67. *Discussion.* After consideration of the comments and the overwhelming support for codifying the NCC's recommendation,¹⁶⁰ we reiterate our support for designating two Interoperability channels as calling channels. We continue to believe that calling channels are integral to a successful Interoperability system. Accordingly, we will designate two nationwide calling channels in the band plan.¹⁶¹ In addition, as the NCC recommended,¹⁶² we prohibit encryption on the calling channels; these channels must be open and readily-accessible, so that public safety entities from neighboring jurisdictions can communicate easily, and identify on which channel they should meet in the event of an emergency.

68. With regard to licensees operating fixed equipment on the Interoperability channels to monitor the calling channels, we will allow the states to address this issue. We agree with those parties commenting on this issue that the details of such monitoring, including the specific monitoring scheme for the release of channels being used for secondary trunking, should remain at the state level.¹⁶³

D. Technical Standards

1. Narrowband Digital Voice Standards for Interoperability Channels

69. *Background.* In its report, the NCC indicated that it considered three digital voice standards before reaching its recommendation of a standard for the Interoperability channels: Project 25 Phase I,

¹⁵⁷ *Id.* at 15 ¶ 47; see also *Fourth Notice*, 15 FCC Rcd at 16915 ¶ 39.

¹⁵⁸ See *Fourth Notice*, 15 FCC Rcd at 16915 ¶ 40.

¹⁵⁹ *Id.*

¹⁶⁰ Illinois State Police Comments at 5; Joint Commenters Comments at 10-11; NPSTC Comments at 6; Orange County Comments at 4; PSWN Comments at 7; Florida Comments at 5; California Comments at 12; Mesa Comments at 4.

¹⁶¹ The two nationwide calling channels are 39/999, 40/1000, 681/1641, and 682/1642.

¹⁶² *Fourth Notice*, 15 FCC Rcd at 16915 ¶ 39.

¹⁶³ Florida Comments at 5, "we believe it should be left to the state and RPC planning levels to address the details of monitoring requirements (e.g., 24 hours, 7 days/week, and equipment configuration" California did not oppose monitoring, but asks "who will fund such coverage?" California Comments at 13.

Project 25 Phase II, and the European Technical Standards Institute (ETSI) 392 TETRA¹⁶⁴ system (TETRA).¹⁶⁵ After considering these different voice standards, the NCC recommended that we adopt Project 25 Phase I as the digital voice standard for the Interoperability channels.¹⁶⁶ While we sought comment on what digital voice standard we should adopt for use on the Interoperability channels, we nonetheless tentatively concluded that we should adopt the Project 25 Phase I standard at this time.¹⁶⁷ In seeking comment on this issue, we urged parties to be cognizant of the dual goals of (1) encouraging the development and usage of the most spectrum-efficient technology, and (2) providing public safety entity access to the 700 MHz Interoperability channels on a near-term basis in a cost-effective manner.¹⁶⁸

70. *Discussion.* We, as an initial matter, continue to believe that if interoperability is to be achieved on the Interoperability channels, a single standard must be selected to ensure equipment compatibility.¹⁶⁹ Based on our review of the record in this proceeding, we conclude that the Project 25 Phase I standard should be the single narrowband digital voice standard for the Interoperability channels at this time, as recommended by the NCC. We note that most commenters generally support adoption of the Project 25 Phase I standard at this time.¹⁷⁰ We believe that adopting this standard will further our goal of providing public safety entities access to the Interoperability channels on a near-term basis in a cost-effective manner.¹⁷¹ First, we believe that of the three standards considered by the NCC, adoption of this standard best promotes our goal of fostering competition in the manufacture and sale of public safety equipment because it is an ANSI standard and the other two currently are not ANSI standards. Second, we believe that using the Project 25 Phase I standard¹⁷² would most likely result in public safety entities being able to utilize the Interoperability channels on a near-term basis given that it has been implemented successfully in other public safety bands, such as the 800 MHz public safety frequencies.¹⁷³ Further, we believe that this result is particularly important in those areas of the country where the 700 MHz band is not encumbered by broadcast television operations and, thus, available now.¹⁷⁴

¹⁶⁴ TETRA is a four-slot Time Division Multiple Access (TDMA) standard in which four voice channels are realized within a 25 kHz bandwidth.

¹⁶⁵ *Fourth Notice*, 15 FCC Rcd at 16917 ¶ 44.

¹⁶⁶ NCC Report at 17 ¶ 54.

¹⁶⁷ *Fourth Notice*, 15 FCC Rcd at 16917-18 ¶ 46.

¹⁶⁸ *Id.*

¹⁶⁹ *First Report and Order and Third Notice of Proposed Rulemaking*, 14 FCC Rcd at 204 ¶ 111.

¹⁷⁰ See North America TETRA Forum Comments at 10-11 (supports adoption of standard on a short-term basis); Nokia Comments at 6; Com-Net Ericsson Comments at 15; Orange County Comments at 4; E.F. Johnson Comments at 2; Ronald J. Gillory (Gillory) Comments at 1; Buchanan Comments at 5; Mesa Comments at 7; Kenwood Comments at 11; NCC Comments at 17; Florida Comments at 5; APCO Comments at 4; IACP Comments at 2; Motorola Comments at 4; FLEWUG Comments at 3; PSWN Comments at 9; Project 25 Steering Committee Comments at 3.

¹⁷¹ *Fourth Notice*, 15 FCC Rcd at 16918 ¶ 46.

¹⁷² See Buchanan Comments at 6.

¹⁷³ See NCC Report at 17 ¶ 54; City of Houston (Houston) Reply Comments at 1; Orange County Comments at 4.

¹⁷⁴ See APCO Comments at 4.

71. Thus, at this juncture, we decline to pursue the other alternatives discussed in the *Fourth Notice* or comments thereto. Specifically, we decline to adopt either the Project 25 Phase II or TETRA standards. We recognize that these standards have certain spectrum efficiency advantages (such as being consistent with the spirit of one voice channel per 6.25 kHz bandwidth). We nonetheless are concerned that adopting either of them might have an adverse impact on realization of our goal of facilitating expeditious access to the Interoperability spectrum and rapid delivery of 700 MHz band public safety equipment. In this regard, we note that the Project 25 Phase II standard currently is not a common denominator between several technologies in development. In addition, the TETRA system is not yet an ANSI standard. Also, we reject the suggestion by the Joint Commenters and Baltimore County that we immediately permit 12.5 kHz analog operations on an interim basis, subject to a specific phase-out schedule tied to the development and availability of 6.25 kHz digital equipment.¹⁷⁵ In this connection, we note our earlier decisions on this issue. In the *First Report and Order* in this proceeding, we determined that all 700 MHz band public safety equipment, when operating on the General Use and Interoperability channels, must employ digital modulation as the primary modulation mode.¹⁷⁶ We further determined that mobile and portable units, when operating on the Interoperability channels, could also utilize analog modulation as a secondary mode in addition to the primary digital mode.¹⁷⁷ In the *Second Memorandum Opinion and Order* in this proceeding, we denied petitions for reconsideration on this issue because we wanted to ensure from the outset the incorporation of spectrally efficient modulation technology in the 700 MHz band public safety equipment.¹⁷⁸ Neither the Joint Commenters nor Baltimore County have presented arguments that persuade us to revisit or change our earlier decisions on this matter. As a result, we decline to adopt their suggestion.

72. In light of our decision to adopt the Project 25 Phase 1 standard, we, in effect, have addressed Ericsson's pending request that we modify the channel efficiency requirement (data throughput) of 4.8 kilobits per second (kbps) per 6.25 kHz for the narrowband Interoperability channels.¹⁷⁹ Specifically, Ericsson requests that we adopt a requirement that transmitters for voice communications in the narrow bandwidth segment of the 700 MHz band meet a spectrum efficiency requirement of one voice channel per 6.25 kHz of channel bandwidth, regardless of the data rate supplied.¹⁸⁰ As we stated in the *Fourth Notice*, Ericsson's recommendation was at odds with adopting the Project 25 Phase I standard, which satisfies the current channel efficiency requirement of 4.8 kbps per 6.25 kHz, but not Ericsson's recommended modified channel efficiency requirement.¹⁸¹ In addition, we note that a significant number of the commenters discussing this issue support retaining the current channel efficiency requirement for the Interoperability channels.¹⁸² We further note that in response to the *Fourth Notice* Ericsson indicated

¹⁷⁵ See Joint Commenters Comments at 11-14; Baltimore County Comments at 3.

¹⁷⁶ *First Report and Order*, 14 FCC Rcd at 204 ¶ 110.

¹⁷⁷ *Id.*, 14 FCC Rcd at 204, 210 ¶¶ 110, 128.

¹⁷⁸ *Second Report and Order*, 15 FCC Rcd 16851 ¶ 10.

¹⁷⁹ See *Fourth Notice*, 15 FCC Rcd at 16918-19 ¶ 50. We note that Ericsson did not limit its request to the narrowband Interoperability channels, but included the narrowband General Use channels as well. Given our decision to seek further comment on the issue of a migration path for the General Use channels, we defer action on this portion of Ericsson's request so as not to prejudge the decision on that issue.

¹⁸⁰ *Id.*

¹⁸¹ *Id.* at 16919 ¶ 52.

¹⁸² See APCO Comments at 5; College Station Comments at 2; Houston Reply Comment at 1, 2; Mesa Comments at 2-3; Orange County Comments at 4; E.F. Johnson Comments at 2; FLEWUG Comments at 9; IACP Comments at 1-5; Kenwood Comments at 13; Motorola Comments at 1-2; NPSTC Comments at 3-5; NYSTEC Comments at (continued....)

its support for the adoption of the Project 25 Phase 1 standard on the Interoperability channels,¹⁸³ thus we believe that, at this juncture, it too supports retaining the current channel efficiency standard for the narrowband Interoperability channels. For these reasons, we retain the efficiency requirement of 4.8 kbps per 6.25 kHz as initially adopted in the *First Report and Order*.

2. Migration Path to 6.25 kHz Technology

a. 700 MHz Band Interoperability Channels

73. *Background.* In connection with our tentative conclusion to adopt the Project 25 Phase I standard as the digital voice standard for the Interoperability channels, we tentatively concluded in the *Fourth Notice* that we should incorporate a “migration path” to 6.25 kHz standards for the Interoperability channels.¹⁸⁴ We sought comment on specific issues pertaining to migrating from a standard based on 12.5 kHz channels (Project 25 Phase I) to a standard based on one voice channel per 6.25 kHz (6.25 kHz standard), including, but not limited to, the appropriate length of time for such migration, how the migration would be effectuated and the costs associated with such migration.¹⁸⁵

74. *Discussion.* We find that the majority of commenters addressing this issue oppose our adopting a migration path to a 6.25 kHz standard for the Interoperability channels at this time. We note, however, that the commenters are not in agreement as to whether we should revisit the migration at some later date. While we continue to believe that there are benefits to adopting a migration path to a 6.25 kHz standard for the Interoperability channels, we do not believe that we should adopt a specific migration path at this time based on our review of the record in this proceeding. What follows is our analysis of the comments we received on this issue and the rationale for our approach regarding this issue. We first address why we continue to believe that we should not foreclose the adoption of a migration path to a 6.25 kHz standard for the Interoperability channels. Next, we discuss our rationale for not adopting a migration path for the Interoperability channels at this time. Finally, we address when and in accordance with what principles we should revisit the issue of adopting such a migration path.

75. As we noted in the *Fourth Notice*, we are pursuing the dual goals of (1) providing public safety entities access to the 700 MHz Interoperability channels on a near-term basis in a cost-effective manner, and (2) encouraging the development and usage of the most spectrum-efficient technology.¹⁸⁶ We continue to believe that incorporation of a migration path to a 6.25 kHz standard for the Interoperability channels is an effective means by which we can foster use of spectrally efficient equipment in the 700 MHz band, but we note the substantial obstacles to the implementation of an interoperability standard incorporating 6.25 kHz technology. In this regard, we disagree with those commenters who oppose a migration path for the Interoperability channels on the basis that no spectrum efficiency gains would be realized.¹⁸⁷ We believe, as a general matter, that the public safety community should pursue effective, efficient and maximized use of the 700 MHz band spectrum in its entirety. We

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12, 13; Project 25 Steering Committee Comments at 6-9; Project 25 Technology Interest Group Comments at 3-7; NCC Comments at 12; PSWN Comments at 10; Buchanan Comments at 6; Gillory Comments at 1; California Comments at 13-14; Florida Comment at 6; Ohio Comments at 3.

¹⁸³ Com-Net Ericsson Comments at 13-14.

¹⁸⁴ *Fourth Notice*, 15 FCC Rcd at 16918 ¶ 47.

¹⁸⁵ *Id.* at 16918 ¶¶ 47-49.

¹⁸⁶ *Id.* at 16917-18 ¶ 46.

¹⁸⁷ See Com-Net Ericsson Comments at 14; Buchanan Comments at 5.

nonetheless acknowledge the technical challenges associated with such migration as described by certain commenters, these challenges include requiring adjustments to public safety equipment, changing out of infrastructure and mobile units, and requiring logistical modifications necessitated by a narrower bandwidth operation.¹⁸⁸ While overall spectrum efficiency in the 700 MHz band remains an important long-term goal of this proceeding, we also have the more immediate goal of achieving interoperability in an expeditious manner. And, as we have learned during the course of this proceeding, there are obstacles to achieving both of these goals at this time due to the current lack of an interoperability standard that incorporates 6.25 kHz technology. The Project 25 Phase 1 12.5 kHz standard offers the means for public safety users to implement competing and otherwise incompatible 6.25 kHz technologies in the General Use channels without sacrificing interoperability. We believe, however, that a 6.25 kHz standard may be established in the future given technological developments currently underway regarding 6.25 kHz equipment.

76. Based on our review of the comments in this proceeding, however, we believe that it would be imprudent for us to establish a specific migration plan at this time. In this connection, we note that several commenters believe that now is an inopportune time to establish a migration plan for the Interoperability channels.¹⁸⁹ These commenters offer various reasons as to why they believe that an inquiry into a migration path for the Interoperability channels is premature at this time. For example, some of them believe that we should not address the migration issue until all or a significant portion of the digital television transition out of the 700 MHz band is completed.¹⁹⁰ Others contend that given that the standards for 6.25 kHz technology in the 700 MHz band are still under development and not anticipated to be completed in the near future, we should not establish a migration plan until such standards are defined.¹⁹¹ We find these concerns to be sufficient basis for us to conclude not to establish a migration path to a 6.25 kHz standard for the Interoperability channels at this time. We believe that this approach would be the more prudent course of action at this juncture because we do not yet have the benefit of experience in the utilization of the Interoperability channels and an approved 6.25 kHz standard for the 700 MHz band. We further believe that such information will allow us to make a more informed decision as to what migration path, if any, should be pursued for the Interoperability channels.

77. As a result, we will adopt the suggestion by several commenters that we revisit this issue at a later time. We note, however, that the commenters differ as to when we should revisit this matter. For instance, the City of Mesa, Arizona suggests waiting ten years after completion of the DTV transition and the issuance of licenses for public safety use before opening an inquiry into migrating to 6.25 kHz technology.¹⁹² APCO and IACP, on the other hand, suggest deferring the issue of migrating to a 6.25 kHz standard until 2006 or six months following Commission notice that at least fifteen of the top twenty metropolitan areas have been cleared of all relevant television stations.¹⁹³ Similarly, the NCC recommends that we evaluate the status of technological development in the 700 MHz band in approximately six years (perhaps co-incident with the potential ending of the DTV transition period on

¹⁸⁸ See E.F. Johnson Comments at 2; Com-Net Ericsson Comments at 14; Gillory Comments at 1.

¹⁸⁹ See Mesa Comments at 6; APCO Comments at 9-10; IACP Comments at 4-5; Motorola Comments at 8; FLEWUG Comments at 3; PSWN Reply Comments at 5; Project 25 Steering Comments at 3.

¹⁹⁰ Mesa Comments at 6; APCO Comments at 9-10; IACP Comments at 4-5; Kenwood Comments at 11,12; FLEWUG Comments at 7.

¹⁹¹ NCC Comments at 17; Nokia Comments at 2.

¹⁹² City of Mesa Comments at 6.

¹⁹³ APCO Comments at 9-10; IACP Comments at 4-5.

December 31, 2006).¹⁹⁴ It believes that waiting this period would permit evaluation of whether technological developments have reached a point that selection of an “one-voice-per-6.25 kHz” technology is achievable as an interoperability standard.¹⁹⁵ After reviewing these suggestions, we believe that the best course of action would be to revisit this issue no earlier than 2005. We believe that this timeframe is appropriate for several reasons. First, we believe that this is a sufficient period of time in which considerable progress on, if not completion of, the development of 6.25 kHz standards for the 700 MHz band can be made. Second, we believe that this time period would allow for the planning and possibly initial construction of some 700 MHz band public safety systems utilizing the Interoperability channels. Third, we anticipate that considerable progress will have been made in the transition of broadcast operations out of the 700 MHz band. With all of these benchmarks being met, we believe that we will be better able to examine and evaluate the technological and operational implications of a specified migration path.

78. Against this backdrop, however, we want to take measures to ensure that our decision to revisit the migration path issue in 2005 does not hinder the development and deployment of 700 MHz band public safety equipment or the planning and construction of public safety systems in this band. Thus, we are adopting certain principles underlying our decision to revisit the issue of establishing a migration path for the Interoperability channels. Given that we envision that some 700 MHz-band public safety systems will be planned and/or built prior to our final decision on this issue, we conclude that any migration path must, at a minimum, allow such stations to continue operating for a certain period of time. We believe that it would be reasonable for that period of time to not be less than ten years from the commencement of the system’s operations in order to afford the public safety licensees sufficient planning time to modify their systems as necessary. In addition, we will require that such migration path include a standard that is backward compatible with the Project Phase I standard so that the achievement of interoperability will not be compromised while these systems remain in operation. We believe that these principles will provide a level of certainty to public safety entities so they can use the spectrum in the near-term as well as a sufficient incentive for equipment manufacturers to develop and deploy 700 MHz band equipment in an expeditious manner.

b. 700 MHz Band General Use Channels

79. We state, as an initial matter, that with respect to a migration path to 6.25 kHz technology, the *Fourth Notice* sought comment on this issue only for the 700 MHz band Interoperability channels.¹⁹⁶ We note, however, that in responding to the *Fourth Notice* issue several commenters opined not only on migration path issues regarding the Interoperability channels, but also the General Use channels.¹⁹⁷ Given that we did not seek specific comment on this issue in the *Fourth Notice*, we do not believe that this *Fourth Report and Order* is the proper vehicle to adopt final rules regarding how 6.25 kHz technology will be implemented on the General Use channels. Thus, we decline to require, at this time, that equipment operating on the General Use channels must meet a spectrum efficiency standard of one voice channel per 6.25 kHz. We nonetheless are committed to ultimately requiring migration to such efficiency standard. We, however, believe that we need additional information as to the most expeditious and effective manner to achieve this result. Consequently, we are issuing a *Fifth Notice* to develop a complete

¹⁹⁴ NCC Comments at 17.

¹⁹⁵ *Id.*

¹⁹⁶ *Fourth Notice*, 15 FCC Rcd at 16917 ¶ 46.

¹⁹⁷ We address the issue of migration to 6.25 kHz technology on the general use channels in the attached *Fifth Notice*. See *Fifth Notice*, *infra*.

and comprehensive record as to how we can best effectuate the use of 6.25 kHz technology on the General Use channels.

80. We nonetheless take this opportunity to reiterate and expound upon the determinations that we have made regarding operations on the 700 MHz band General Use channels. First, we note that we established a standard channel bandwidth of 6.25 kHz for all narrowband segments of the 700 MHz band (which includes both General Use and Interoperability channels). In this connection, consistent with our approach in the Refarming proceeding, we adopted a data rate efficiency (channel efficiency standard) of 4.8 kbps for narrowband channels. We also indicated that 6.25 kHz channels could be combined to create 12.5 kHz and 25 kHz channels, provided that a spectrum use efficiency of 4.8 kbps is maintained.¹⁹⁸ Second, we have not required employment of a single standard for equipment operating on the General Use channels. We envisioned that this approach would allow use of various technologies in the General Use portion of the 700 MHz band, thus fostering competition in the public safety equipment marketplace. We continue to believe that we should pursue policies that promote competition in the development of public safety equipment for the 700 MHz band.

81. Against this backdrop, we believe that it would be prudent to adopt measures that facilitate use of the 700 MHz band spectrum during the pendency of the issue raised in the *Fifth Notice*. This approach is similar to the actions we are taking in analyzing the migration path issue for Interoperability channels. Our underlying purpose in adopting the conclusions that follow is to ensure that our actions with respect to this issue do not hinder the development and deployment of 700 MHz public safety equipment or the planning and construction of public safety systems in this band. We recognize that raising the issue of a standard for the General Use channels now could inadvertently create uncertainty with manufacturers and users that could result in a delay in equipment availability in this band. Uncertainty could result if equipment manufacturers were hesitant to produce, and public safety entities were wary of purchasing, 12.5 kHz-capable equipment because they were concerned that operation of that equipment could become illegal on short notice. In order to allay such concerns, we adopt the following framework to accommodate the expeditious development and deployment of 700 MHz band equipment on the General Use channels, where possible. We conclude that any 12.5 kHz-based systems constructed and placed in operation prior to December 31, 2005, will be able to continue to purchase and deploy 12.5 kHz equipment for system expansion or maintenance, and that such 12.5 kHz systems will not be required to cease operations and convert to 6.25kHz technology prior to December 31, 2015, at the earliest. In addition, we conclude that in any specific migration plan for the General Use channels, the earliest date we would require new systems to have 6.25 kHz technology would be December 31, 2005. In the context of the *Fifth Notice*, we will determine the specific requirements by which this conclusion will be implemented.¹⁹⁹

82. We believe that this approach will have several public interest benefits. First, it will promote both development of equipment and utilization of the 700 MHz public safety spectrum in the near-term where available. Second, our approach affords public safety entities at least a 10-year period over which they could operate a 12.5 kHz based system without having to cease operations, provided that such systems are placed in operation prior to December 31, 2005. Third, public safety entities that implement 700 MHz band systems prior to December 31, 2005 will be able to obtain 12.5 kHz equipment to meet additional equipment requirements due to increases in personnel, replacement of inoperable equipment, or geographic expansion of their systems over at least a ten-year period. We note that our approach here is intended to set forth the framework upon which we can establish a migration path to 6.25 kHz technology in response to the *Fifth Notice*. We further note that our approach is not intended to preclude or hinder the development and deployment of 6.25 kHz-based systems prior to December 31, 2005.

¹⁹⁸ *First Report and Order*, 14 FCC Rcd at 172-173 ¶¶ 37-38.

¹⁹⁹ *See Fifth Notice, infra*, paras. 95-99.

3. Narrowband Low Speed Data Transmission Standard and Channel Reservation

83. *Background.* In the *Fourth Notice*, and pursuant to the NCC's recommendation, we proposed to reserve two Interoperability channels for data transmission. The NCC specifically requested that we reserve Interoperability channels 21 and 51 with their designation changed to DTAC 21 and DTAC 51.²⁰⁰ The data standard for these two channels must be able to support three specific transmission modes.²⁰¹ We asked for comment on this proposal.

84. Additionally, we sought comment on the proposal that subscriber units designed for data-only applications not be required to have voice capability, and that subscriber units designed for voice-only applications not be required to have data transmission capability. Finally, we noted the NCC's recommendation that we adopt the data interoperability standard that is incorporated in the Project 25 suite of standards and is defined by one ANSI standard and four TIA/EIA standards.²⁰² This data interoperability standard requires use of a 12.5 kHz channel - the same channel size recommended by the NCC for voice transmission. The NCC asserts that using the same size for voice transmission will reduce the complexity and cost of equipment. It notes that the gross data rate meets our spectrum efficiency requirement of 9600 bps for a 12.5 kHz channel.²⁰³ We solicited comments on the appropriate technical standard for narrowband data transmissions on Interoperability channels. We urged parties to consider the matter of spectrum efficiency and any changes necessary in our rules.

85. *Discussion.* We agree with the NCC that we should reserve two Interoperability channels for data only communications.²⁰⁴ Generally, the commenters support reservation of two Interoperability channels for data transmission.²⁰⁵ Given the high demand for voice communications in the 700 MHz band, we agree with FLEWUG that reservation of more than two channels is not prudent at this time.²⁰⁶ However, Com-Net Ericsson believes it is impossible to render an opinion on the adequacy of reserving two Interoperability channels for data without knowing the type(s) and volume of data to be transmitted.²⁰⁷ We do not believe it is necessary to specify the type(s) of data to be used on the narrowband channels, as we already require 9600 bps for a 12.5 kHz channel. Consequently, any data applications that satisfy this requirement may be transmitted on these channels. We do not wish to inadvertently prohibit the use of data types that through future technological improvements will satisfy our requirements for these channels. Moreover, we agree with APCO that, in the instant case, the narrow bandwidth data will be required to support only those applications having a low data throughput

²⁰⁰ NCC Report, Appendix H at 2.

²⁰¹ The transmission modes are direct unit-to-unit without infrastructure; Unit-to-unit using one or more standalone intermediate stations in either an RF-repeat or a store-and-forward repeat mode; and unit-to-unit through a linked infrastructure. In this context unit is defined as either a fixed or mobile subscriber station. *Id.*

²⁰² NCC Report at 21 ¶ 64.

²⁰³ *Id.*, ¶ 62.

²⁰⁴ The two interoperability channels reserved for data-only transmission are 279/1239, 280/1240, 921/1881, and 922/1882.

²⁰⁵ APCO Comments at 10; California Comments at 15; Dataradio Comments at 1; FLEWUG Comments at 8; Joint Commenters Comments at 14; NPSTC Comments at 7; Florida Comment at 6; Ohio Comments at 3.

²⁰⁶ FLEWUG Comments at 8.

²⁰⁷ Com-Net Ericsson Comments at 21.

requirement.²⁰⁸ Additionally, other applications requiring higher data throughputs will be implemented on channels having wider bandwidth.²⁰⁹ By establishing a standard for the transport on the narrow bandwidth channels, it then becomes possible to allocate specific data applications to either the narrow bandwidth channels or the wide bandwidth channels. Therefore, we adopt and identify two Interoperability channels for data transmission and will amend the band plan to identify these two channels for nationwide Interoperability.

86. In addition to reserving two Interoperability channels for data transmission, we adopt the data interoperability standard that is incorporated in the Project 25 suite of standards, as it is defined by one ANSI standard and four TIA/EIA standards. Most parties believe that adoption of the Project 25 suite for data interoperability is appropriate.²¹⁰ Com-Net Ericsson, however, does not believe there is any basis for supporting the Project 25 data standard as the narrowband data interoperability standard.²¹¹ Further, Com-Net Ericsson strongly recommends that we reject the NCC recommendation.²¹² Com-Net Ericsson argues that selection of the Project 25 standard is premature because the NCC has left too many variables unanswered.²¹³

87. Dataradio also opposes the recommendation, asserting that the Project 25 standard does not address issues involved in achieving data interoperability, nor does it meet the forward-looking needs of data users, or standardize the application layer to properly communicate with data. We note that Project 25 Phase I is both for voice and low speed data applications. In other words, it supports both voice and data on the Interoperability channels. Dataradio believes that the standard does not meet the Commission's mandate of developing data standards that will facilitate spectrum efficient technological advancement and promote competition among manufacturers, and has not been thoroughly discussed and considered by the NCC participants.²¹⁴ APCO maintains that the NCC conducted open proceedings and provided ample opportunity for the presentation and discussion of alternative standards.

88. In its response, APCO notes that the NCC had indeed examined the type of data transmission that would be necessary for interoperability purposes.²¹⁵ It notes the "user needs statement of Requirements for low speed data standards on interoperability channels" is contained in Appendix H of the NCC Recommendations submitted on February 25, 2000.²¹⁶ Further, APCO notes while it is appropriate for the Commission to adopt an interoperability standard applicable to the "transport layer" of a data communications system, the establishment of standards application to the "application layer" are not a necessary prerequisite for interoperability standards.²¹⁷ APCO also notes that the transport layer

²⁰⁸ APCO Comments at 10.

²⁰⁹ *Id.*

²¹⁰ Orange County Comments at 4; FLEWUG Comments at 9; PSWN Comments 10; Ohio Comments at 3; Florida Comments at 6; Buchanan Comments at 6-7.

²¹¹ Ericsson Comments at 21.

²¹² *Id.*

²¹³ *Id.* at 20 – 21.

²¹⁴ Dataradio Comments at 6-7.

²¹⁵ APCO Reply Comments at 11.

²¹⁶ *Id.* at 10.

²¹⁷ *Id.* at 11.

certainly needs to support the requirements imposed upon it by the various applications; however, it also by necessity places limits on the types of applications that may be implemented.²¹⁸

89. In its February Recommendation submitted to the Commission, the NCC had examined the type of data transmission that would be necessary for interoperability purposes. This issue is summarized in Appendix H of the Recommendations. Defining the type of data applications to be supported by the application layer as Dataradio and Ericsson suggest is not necessary at this point because doing so before field experience on mobile data in interoperability operations environment would limit the type of applications that may be implemented. The recommendations, which are met by the Project 25 Phase I Standard, will support any type of application intended for low speed data channels.²¹⁹ These include short status messages; fill in blank forms, and short emails. Although the Project 25 Phase I may not meet the speed desired by Dataradio, it meets our spectrum efficiency requirement of 9.6 kbps for a 12.5 kHz wide channel.

90. Finally, we adopt our proposal that end user equipment designed for data is not required to be voice-capable. Further, end user equipment designed for voice is not required to be data capable. The commenters also concur, by and large, with this view.²²⁰ If an end user unit designed for data is also voice capable, it must meet the Project 25 Phase I standard.

4. Encryption

91. *Background.* In the *Fourth Notice*, we noted that the NCC recommends we require a standard encryption algorithm if we decide to permit licensees to use encryption on the 700 MHz public safety Interoperability channels.²²¹ We agreed with the NCC that the use of encryption by public safety entities was increasing.²²² We supported encryption on the band except on calling channels.²²³ We requested comments on the NCC's recommendations that if encryption is permitted on the Interoperability channels, a single standard should be adopted.²²⁴

92. *Discussion.* We continue to believe that there is an increasing use of encryption by the public safety entities and therefore it should not be prohibited on Interoperability spectrum. However, we are concerned that the use of encryption could be detrimental to interoperability communications. Therefore, we will permit the use of encryption on interoperability spectrum, except for the two calling channels, only if the encryption function may be disabled by the radio user using a readily accessible switch or other readily accessible control.²²⁵ We agree with the commenters that if we allow encryption on

²¹⁸ *Id.*

²¹⁹ NCC Report, Appendix H.

²²⁰ College Station Comments at 2; Mesa Comments at 1-7; Orange County Comments at 4-5; E.F. Johnson Comments at 2; FLEWUG Comments at 9; IACP Comments at 1-5; Project 25 Technology Interest Group Comments at 1; NCC Comments at 12; Gillory Comments at 1; California Comments at 15-16; Florida Comments at 6.

²²¹ *Fourth Notice*, 15 FCC Rcd at 16920 ¶ 56.

²²² *Id.*

²²³ *Id.*

²²⁴ *Id.*

²²⁵ See Permissive Trunking section, ¶¶ 42-45.

Interoperability channels then we should have an encryption standard. We adopt TIA/EIA IS 102 AAAAA Project 25 DES encryption protocol as recommended by the Project 25 Steering Committee and the NCC as the encryption standard.²²⁶ In this regard, we note that no party suggested a different standard.

5. Receiver Standards and Interference

93. *Background.* In the *First Report and Order*, we observed that we traditionally have adopted rules only as necessary to limit interference between communication systems and have not specified performance or quality standards for receivers. In the *Fourth Notice*, we sought comment on whether we should require equipment manufacturers to label equipment to indicate the interference level that a customer might expect with a given receiver.²²⁷ For interoperability, we charged the NCC with recommending the parameters (e.g., sensitivity, selectivity, dynamic range, and durability characteristics) to include the receiver standards. The NCC has included this matter in its second year work plan.²²⁸ We also sought comment on whether the interests of public safety radio and commercial licensees in the 700 MHz would be served by establishing interference standards for receivers operating on public safety frequencies.²²⁹ We requested comments on the impact of CMRS on the 700 MHz public safety band.²³⁰ We also sought comment on whether public safety operations in the 700 MHz band might be less susceptible to interference than public safety operations in the 800 MHz band due to the various differences in channelization plans and the use of guard channels in the 700 MHz band.²³¹

94. *Discussion.* As noted above, we have charged the NCC with recommending the parameters (e.g., sensitivity, selectivity, dynamic range, and durability characteristics) to include possible receiver standards for Interoperability channels. The NCC has included this matter in its second year work plan. In fact, in its comments, the NCC states that it is working with TIA TR-8 committee to develop appropriate receiver performance standards.²³² Accordingly, we will not consider adoption of specific receiver standards at this time, pending receipt of NCC's report on this issue. Upon receiving the NCC report, we shall consider the issue of adopting receiver performance standards, including the issue of our statutory authority to adopt such standards.

IV. FIFTH NOTICE OF PROPOSED RULE MAKING

95. *Background.* As noted in the *Fourth Report and Order*, while we received comments regarding migration to a 6.25 kHz standard on the 700 MHz band General Use channels, we declined to adopt final rules on this issue until after we sought specific comment thereon. In this *Fifth Notice of Proposed Rulemaking*, we seek comment on the proposals presented by certain commenters regarding implementing a 6.25 kHz standard for the General Use channels. By way of background, the commenters, who raised this issue in the *Fourth Notice*, are generally divided into two groups. The first group, which includes Com-Net Ericsson, Nokia, and NATF, is against any migration on the General Use

²²⁶ Project 25 Steering Committee at 6; NCC Comments at 18.

²²⁷ *Fourth Notice*, 15 FCC Rcd at 16921-22 ¶ 59.

²²⁸ *Id.*

²²⁹ *Id.*

²³⁰ *Id.*

²³¹ *Id.*

²³² NCC Comments at 18.

channels at all. They urge adoption of the concept of one voice channel per 6.25 kHz. The second group, which includes APCO, IACP, Motorola, FLEWUG, PSWN, and the Project 25 Steering Committee, set forth a migration path consisting of five stages and spanning a total of twenty-one years. What follows is a summary of the major contentions of each group's position.

96. Com-Net Ericsson, Nokia, and NATF recommend adoption of a 6.25 kHz efficiency standard, *i.e.*, one voice path per 6.25 kHz of occupied bandwidth, for voice operations on the General Use channels.²³³ Com-Net Ericsson, for example, asserts that compliant technologies are available today, and further technological advances are anticipated between now and when 700 MHz-band public safety equipment becomes available.²³⁴ Nokia and NATF recommend that in 2005, we evaluate equipment deployed in the 700 MHz band and the progress of the technical development and, based on this information, consider a formal migration path to 6.25 kHz interoperability.²³⁵ Nokia contends that equipment utilizing 6.25 kHz efficiency is already fully developed and available for general use from a wide array of manufacturers, including leading U.S. manufacturers.²³⁶ Nokia also believes that adopting this efficiency standard will encourage equipment manufacturers to devote their research and development resources to 6.25 kHz conventional technology, thus, accelerating realization of a 6.25 kHz standard for the Interoperability channels.²³⁷ It further believes that adopting a 6.25 kHz efficiency standard for General Use now will encourage needed competition in the supply of equipment for this band.²³⁸

97. Under the five-step, twenty-one year plan put forth by APCO and IACP,²³⁹ Step one is immediate adoption of Project 25 Phase I as the Interoperability standard. Step two requires that as of December 31, 2006, or within six months following Commission notice that at least fifteen of the Top twenty metropolitan areas have been cleared of relevant television stations, whichever is later, all newly type-accepted radios for use in the band must have the capability to provide one voice channel per 6.25 kHz and must still meet the Project 25 Phase I standard for the Interoperability channels. Within ten years after the date established in Step two, all General Use operations must be at 6.25 kHz in the Top fifty metropolitan areas for Step three. Step four requires that all General Use operations must be at 6.25 kHz by fifteen years after the date established in Step two. Finally, as of the date established in Step two, the Commission must re-examine technological and marketplace developments and determine whether it is possible to develop a migration path for the subsequent transition.

98. *Discussion.* We seek comment on the proper approach for achieving a 6.25 kHz standard for the General Use channels. As noted above, however,²⁴⁰ we have concluded that, in order to facilitate the prompt use of the 700 MHz Band spectrum, we will not require new systems to use 6.25 kHz technology before December 31, 2005. We have also concluded that any 12.5 kHz-based systems constructed and

²³³ Ericsson Comments at 17-18, Nokia Comments at 4-5, NATF Comments at 5.

²³⁴ Ericsson Comments at 17-18.

²³⁵ Nokia Comments at 14; NATF Comments at 7.

²³⁶ Nokia Comments at 12. *See* Letter, dated December 7, 2000, to Magalie Salas, Secretary, FCC from Leo R. Fitzsimon, Director of Regulatory and Industry Affairs, Nokia.

²³⁷ Nokia Comments at 12.

²³⁸ *Id.*

²³⁹ *See* APCO Comments at 7-10; IACP Comments at 3-5.

²⁴⁰ *See Fourth Report and Order, supra*, para. 81.

placed in operation prior to December 31, 2005, will be able to continue to purchase and deploy 12.5 kHz equipment for system expansion or maintenance, and that such 12.5 kHz systems will not be required to cease operations and convert to 6.25kHz technology prior to December 31, 2015, at the earliest.²⁴¹ While nothing in the Commission's Rules would prohibit the use of 6.25 kHz technology now, we are concerned that mandating the use of 6.25 kHz technology would only serve to delay the use of the 700 MHz Band spectrum. Commenters should address the advantages and disadvantages associated with various approaches that are consistent with the "safe harbor" we have adopted today. We note our concern that the five-step, twenty-one year plan is too long of a migration path considering the demand for public safety spectrum. We nonetheless note that there are several factors that could impact the length of the migration, for example, the duration of broadcaster's transition from analog to digital television. Thus, we ask commenters to identify such factors and the potential impact that they would have on the duration of a migration period and to discuss what would be an appropriate length for migration and the reasoning therefor.

99. In this vein, we seek comment on whether the Commission should adopt different migration paths for rural and urban markets, given their different needs. In establishing a migration path for the broadcast auxiliary service (BAS) band, we adopted a two-phase plan based on the special needs of various localities, from large cities to rural areas.²⁴² Given the differing needs of public safety entities in rural and urban areas, as well as possible differences in timing when the 700 MHz public safety spectrum may be available to those entities, it may be appropriate to establish multiple migration paths for different types of entities. We encourage commenters that would urge the Commission to adopt multiple migration paths to offer specific proposals.

V. PROCEDURAL MATTERS

A. Regulatory Flexibility Act

100. Appendix B contains a Final Regulatory Flexibility Analysis (FRFA) with respect to the *Fourth Report and Order* and an Initial Regulatory Flexibility Analysis (IRFA) with respect to the *Fifth Notice*. As required by the Regulatory Flexibility Act,²⁴³ the Commission has prepared the analysis of the possible impact on small entities of the rules and proposed rules set forth in this document. Written public comments are requested on the IRFA. These comments must be filed in accordance with the same filing deadlines as comments on the rest of the *Fifth Notice*, but they must have a separate and distinct heading designating them as responses to the IRFA. The Commission's Consumer Information Bureau, Reference Information Center, will send a copy of this *Fourth Report and Order* and *Fifth Notice*, including the FRFA and IRFA, to the Chief Counsel for Advocacy of the Small Business Administration in accordance with the Regulatory Flexibility Act.

²⁴¹ *Id.*

²⁴² Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum at 2 GHz for Use by the Mobile-Satellite Service, ET Docket No. 95-18, *Second Report and Order*, 15 FCC Rcd 12315, 12323-28 ¶¶ 22-37 (2000).

²⁴³ See 5 U.S.C. § 601, *et seq.*

B. Ex Parte Rules -- Permit-But-Disclose Proceeding

101. The *Fifth Notice* is a permit-but-disclose notice and comment rule making proceeding. Ex parte presentations are permitted, except during the Sunshine Agenda period, provided they are disclosed as provided in the Commission's rules.²⁴⁴

C. Paperwork Reduction Act

102. This Report and Order contains either a proposed or modified information collection. As part of its continuing effort to reduce paperwork burdens, we invite the general public and the Office of Management and Budget (OMB) to take this opportunity to comment on the information collections contained in this *Report and Order*, as required by the Paperwork Reduction Act of 1995, Pub. L. No. 104-13. Public and agency comments are due at the same time as other comments on this *Report and Order*; OMB comments are due 60 days from date of publication of this *Report and Order* in the Federal Register. Comments should address: (a) whether the proposed collection of information is necessary for the proper performance of the functions of the Commission, including whether the information shall have practical utility; (b) the accuracy of the Commission's burden estimates; (c) ways to enhance the quality, utility, and clarity of the information collected; and (d) ways to minimize the burden of the collection of information on the respondents, including the use of automated collection techniques or other forms of information technology. Written comments by the public on the proposed and/or modified information collections are due within 60 days. Written comments must be submitted by the Office of Management and Budget (OMB) on the proposed and/or modified information collections on or before 60 days after date of publication in the Federal Register. In addition to filing comments with the Secretary, a copy of any comments on the information collections contained herein should be submitted to Judy Boley, Federal Communications Commission, Room 1-C804, 445 Twelfth Street, S.W., Washington, DC 20554, or via the Internet to jboley@fcc.gov and to Edward Springer, OMB Desk Officer, 10236 NEOB, 725 - 17th Street, N.W., Washington, DC 20503 or via the Internet to Edward.Springer@omb.eop.gov.

D. Comments

103. Pursuant to Sections 1.415 and 1.419 of the Commission's rules,²⁴⁵ interested parties may file comments on or before 30 days from date of publication in the Federal Register and reply comments on or before 45 days from date of publication in the Federal Register. Comments may be filed using the Commission's Electronic Comment Filing System (ECFS), <http://www.fcc.gov/e-file/ecfs.html>, or by filing paper copies.²⁴⁶

104. Comments filed through the ECFS can be sent as an electronic file via the Internet to <http://www.fcc.gov/e-file/ecfs.html>. Generally, only one copy of an electronic submission must be filed. If multiple docket or rule making numbers appear in the caption of this proceeding, however, commenters must transmit one electronic copy of the comments to each docket or rule making number referenced in the caption. In completing the transmittal screen, commenters should include their full name, Postal Service mailing address, and the applicable docket or rule making number. Parties may also submit an electronic comment by Internet e-mail. To obtain filing instructions for e-mail comments, commenters should send an e-mail to ecfs@fcc.gov, and should including the following words in the body of the message, "get form <your e-mail address.>" A sample form and directions will be sent in reply.

²⁴⁴ See generally 47 C.F.R. §§ 1.1202, 1.1203, 1.2306(a).

²⁴⁵ 47 C.F.R. §§ 1.415, 1.419

²⁴⁶ See Electronic Filing of Documents in Rulemaking Proceedings, *Memorandum Opinion and Order*, 13 FCC Rcd 11322 (1998).

105. Parties who choose to file by paper must file an original and four copies of each filing. If more than one docket or rule making number appear in the caption of this proceeding, commenters must submit two additional copies for each additional docket or rule making number. All filings must be sent to the Commission's Secretary, Magalie Roman Salas, Office of the Secretary, Federal Communications Commission, 445 12th Street, S.W., TW-A325, Washington, D.C. 20554. Comments and reply comments will be available for public inspection during regular business hours in the FCC Reference Center of the Federal Communications Commission, Room TW-A306, 445 12th Street, S.W., Washington, D.C. 20554.

106. Parties who choose to file by paper should also submit their comments on diskette. Such a submission should be on a 3.5-inch diskette formatted in an IBM compatible format using Microsoft Word or compatible software. The diskette should be accompanied by a cover letter and should be submitted in "read only" mode. The diskette should be clearly labeled with the commenter's name, proceeding (including the lead docket number, type of pleading (comment or reply comment), date of submission, and the name of the electronic file on the diskette. The label should also include the following phrase "Disk Copy - Not an Original." Each diskette should contain only party's pleading, preferably in a single electronic file. In addition, commenters must send diskette copies to the Commission's copy contractor, International Transcription Service, Inc., 1231 20th Street, NW., Washington, D.C. 20037.

107. Alternative formats (computer diskette, large print, audio cassette and Braille) are available to persons with disabilities by contacting Martha Contee at (202) 418-0260, TTY (202) 418-2555, or via e-mail to mcontee@fcc.gov. This *Fifth Notice* can also be downloaded at <http://www.fcc.gov/wtb/orders/fcc0110.doc>.

108. For further information concerning this proceeding, contact Michael Connelly 202/418-0132, mconnell@fcc.gov, Wireless Telecommunications Bureau.

VI. ORDERING CLAUSES

109. Authority for the issuance of this *Fourth Report and Order* and *Fifth Notice of Proposed Rule Making* is contained in Sections 4(i), 4(j), 7(a), 302, 303(b), 303(f), 303(g), 303(r), 307(e), 332(a), and 332(c) of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i), 154(j), 157(a), 302, 303(b), 303(f), 303(g), 303(r), 307(e), 332(a), 332(c).

110. Accordingly, IT IS ORDERED that Part 90 of the Commission's Rules, 47 C.F.R. Part 90 IS AMENDED as specified in Appendix C.

111. IT IS FURTHER ORDERED that this *Fourth Report and Order* will be effective thirty days after publication in the Federal Register.

112. IT IS FURTHER ORDERED that the Commission's Consumer Information Bureau, Reference Information Center, SHALL SEND a copy of this *Fourth Report and Order* and *Fifth Notice of Proposed Rule Making*, including the Final and Initial Regulatory Flexibility Analyses, to the Chief Counsel for Advocacy of the Small Business Administration.

FEDERAL COMMUNICATIONS COMMISSION



Magalie Roman Salas
Secretary